

## SEQUENCE LISTING

<110> Reed, Steven G.  
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 Houghton, Raymond L.  
 Sleath, Paul R.  
 McNeill, Patricia D.  
 Homer, Mary  
 Secrist, Heather

<120> COMPOUNDS AND METHODS FOR THE DIAGNOSIS  
 AND TREATMENT OF *B. MICROTI* INFECTION

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&lt;211&gt; 1287

&lt;212&gt; DNA

&lt;213&gt; Babesia microti

&lt;400&gt; 11

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&lt;210&gt; 12

&lt;211&gt; 572

&lt;212&gt; DNA

&lt;213&gt; Babesia microti

&lt;400&gt; 12

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&lt;210&gt; 13

&lt;211&gt; 2338

&lt;212&gt; DNA

&lt;213&gt; Babesia microti

&lt;400&gt; 13

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 <213> Babesia microti

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35 40 45
Trp Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu
50 55 60
Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro
65 70 75 80
Ser Gly Thr Gly Trp Pro Ser Glu Ala Gly Trp Ser Ser Glu Arg Phe
85 90 95
Gly Tyr Gln Leu Leu Pro Tyr Ser Arg Arg Ile Val Ile Phe Asn Glu
100 105 110
Val Cys Leu Ser Tyr Ile Tyr Lys His Ser Val Met Ile Leu Glu Arg
115 120 125
Asp Arg Val Asn Asp Gly His Lys Asp Tyr Ile Glu Glu Lys Thr Lys
130 135 140
Glu Lys Asn Lys Leu Lys Lys Glu Leu Glu Lys Cys Phe Pro Glu Gln
145 150 155 160
Tyr Ser Leu Met Lys Lys Glu Glu Leu Ala Arg Ile Phe Asp Asn Ala
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Ser Thr Ile Ser Ser Lys Tyr Lys Leu Leu Val Asp Glu Ile Ser Asn
180 185 190
Lys Ala Tyr Gly Thr Leu Glu Gly Pro Ala Ala Asp Asn Phe Asp His
195 200 205
Phe Arg Asn Ile Trp Lys Ser Ile Val Leu Lys Asp Met Phe Ile Tyr
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Cys Asp Leu Leu Leu Gln His Leu Ile Tyr Lys Phe Tyr Tyr Asp Asn
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 50 55 60  
 Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr  
 65 70 75 80  
 Val Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser  
 85 90 95  
 Gly Thr Gly Trp Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly  
 100 105 110  
 Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr  
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 Lys Thr Lys Glu Lys Asn Lys Leu Lys Lys Glu Leu Glu Lys Cys Phe  
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 Pro Glu Gln Tyr Ser Leu Met Lys Lys Glu Glu Leu Ala Arg Ile Phe  
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 225 230 235 240  
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 <212> PRT  
 <213> Babesia microti

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 50 55 60  
 Thr Gly Trp Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro  
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 Thr Lys Glu Lys Asn Lys Leu Lys Lys Glu Leu Glu Lys Cys Phe Pro  
 165 170 175  
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 180 185 190  
 Asn Ala Ser Thr Ile Ser Ser Lys Tyr Lys Leu Leu Val Asp Glu Ile  
 195 200 205  
 Ser Asn Lys Ala Tyr Gly Thr Leu Glu Gly Pro Ala Ala Asp Asn Phe  
 210 215 220  
 Asp His Phe Arg Asn Ile Trp Lys Ser Ile Val Leu Lys Asp Met Phe  
 225 230 235 240  
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 245 250 255  
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 Lys Ala Leu Val Leu Arg Asp Lys Ile Thr Lys Lys Asp Gly Asp Tyr  
 275 280 285  
 Asn Thr His Phe Glu Asp Met Ile Lys Glu Leu Asn Ser Ala Ala Glu  
 290 295 300  
 Glu Phe Asn Lys Ile Val Asp Ile Met Ile Ser Asn Ile Gly Asp Tyr  
 305 310 315 320  
 Asp Glu Tyr Asp Ser Ile Ala Ser Phe Lys Pro Phe Leu Ser Met Ile  
 325 330 335  
 Thr Glu Ile Thr Lys Ile Thr Lys Val Ser Asn Val Ile Ile Pro Gly  
 340 345 350  
 Ile Lys Ala Leu Thr Leu Thr Val Phe Leu Ile Phe Ile Thr Lys  
 355 360 365

<210> 21

<211> 492

<212> PRT

<213> Babesia microti

<400> 21

Met Tyr Lys Ile Lys Ile Ser Asp Tyr Ile Ile Glu Phe Asp Asp Asn

1	5	10	15
Ala Lys Leu Pro Thr Asp Asn Val Ile Gly Ile Ser Ile Tyr Thr Cys			
20	25	30	
Glu His Asn Asn Pro Val Leu Ile Glu Phe Tyr Val Ser Lys Lys Gly			
35	40	45	
Ser Ile Cys Tyr Tyr Phe Tyr Ser Met Asn Asn Asp Thr Asn Lys Trp			
50	55	60	
Asn Asn His Lys Ile Lys Tyr Asp Lys Arg Phe Asn Glu His Thr Asp			
65	70	75	80
Met Asn Gly Ile His Tyr Tyr Tyr Ile Asp Gly Ser Leu Leu Ala Ser			
85	90	95	
Gly Glu Val Thr Ser Asn Phe Arg Tyr Ile Ser Lys Glu Tyr Glu Tyr			
100	105	110	
Glu His Thr Glu Leu Ala Lys Glu His Cys Lys Lys Glu Lys Cys Val			
115	120	125	
Asn Val Asp Asn Ile Glu Asp Asn Asn Leu Lys Ile Tyr Ala Lys Gln			
130	135	140	
Phe Lys Ser Val Val Thr Thr Pro Ala Asp Val Ala Gly Val Ser Asp			
145	150	155	160
Gly Phe Phe Ile Arg Gly Gln Asn Leu Gly Ala Val Gly Ser Val Asn			
165	170	175	
Glu Gln Pro Asn Thr Val Gly Met Ser Leu Glu Gln Phe Ile Lys Asn			
180	185	190	
Glu Leu Tyr Ser Phe Ser Asn Glu Ile Tyr His Thr Ile Ser Ser Gln			
195	200	205	
Ile Ser Asn Ser Phe Leu Ile Met Met Ser Asp Ala Ile Val Lys His			
210	215	220	
Asp Asn Tyr Ile Leu Lys Lys Glu Gly Glu Gly Cys Glu Gln Ile Tyr			
225	230	235	240
Asn Tyr Glu Glu Phe Ile Glu Lys Leu Arg Gly Ala Arg Ser Glu Gly			
245	250	255	
Asn Asn Met Phe Gln Glu Ala Leu Ile Arg Phe Arg Asn Ala Ser Ser			
260	265	270	
Glu Glu Met Val Asn Ala Ala Ser Tyr Leu Ser Ala Ala Leu Phe Arg			
275	280	285	
Tyr Lys Glu Phe Asp Asp Glu Leu Phe Lys Lys Ala Asn Asp Asn Phe			
290	295	300	
Gly Arg Asp Asp Gly Tyr Asp Phe Asp Tyr Ile Asn Thr Lys Lys Glu			
305	310	315	320
Leu Val Ile Leu Ala Ser Val Leu Asp Gly Leu Asp Leu Ile Met Glu			
325	330	335	
Arg Leu Ile Glu Asn Phe Ser Asp Val Asn Asn Thr Asp Asp Ile Lys			
340	345	350	
Lys Ala Phe Asp Glu Cys Lys Ser Asn Ala Ile Ile Leu Lys Lys Lys			
355	360	365	
Ile Leu Asp Asn Asp Glu Asp Tyr Lys Ile Asn Phe Arg Glu Met Val			
370	375	380	
Asn Glu Val Thr Cys Ala Asn Thr Lys Phe Glu Ala Leu Asn Asp Leu			
385	390	395	400
Ile Ile Ser Asp Cys Glu Lys Lys Gly Ile Lys Ile Asn Arg Asp Val			
405	410	415	
Ile Ser Ser Tyr Lys Leu Leu Leu Ser Thr Ile Thr Tyr Ile Val Gly			
420	425	430	
Ala Gly Val Glu Ala Val Thr Val Ser Val Ser Ala Thr Ser Asn Gly			

	435		440		445
Thr	Glu Ser Gly Gly Ala Gly Ser Gly Thr Gly Thr Ser Val Ser Ala				
	450		455		460
Thr	Ser Thr Leu Thr Gly Asn Gly Gly Thr Glu Ser Gly Gly Thr Ala				
465		470		475	480
Gly Thr Thr Thr Ser Ser Gly Thr Trp Phe Gly Lys					
	485		490		

<210> 22  
 <211> 138  
 <212> PRT  
 <213> Babesia microti

	<400> 22
Ser Leu Gly Gln Pro Ala Ser Leu Gly Gln Pro Ala Ser Leu Gly Gln	
1	5 10 15
Pro Ala Ser Leu Gly Gln Pro Ala Ser Leu Gly Gln Pro Ala Ser Leu	
	20 25 30
Gly Gln Pro Val Pro Leu Gly Pro Pro Ala Ser Leu Gly Pro Pro Ala	
	35 40 45
Ser Leu Gly Pro Pro Ala Ser Leu Gly Gln Pro Val Pro Leu Gly Pro	
50	55 60
Pro Ala Ser Leu Gly Pro Pro Ala Ser Leu Gly Pro Pro Ala Ser Leu	
65	70 75 80
Gly Pro Pro Ala Ser Leu Gly Pro Pro Ala Ser Leu Gly Pro Pro Ala	
	85 90 95
Ser Leu Gly Pro Pro Ala Ser Leu Gly Pro Pro Ala Ser Leu Gly Pro	
	100 105 110
Thr Val Pro Leu Gly Pro Pro Ala Ser Arg Ser Val Ser Pro Ala Lys	
	115 120 125
Thr Ala Pro Leu Ile Lys Lys Ser Val Ile	
130	135

<210> 23  
 <211> 303  
 <212> PRT  
 <213> Babesia microti

	<400> 23
Leu Trp Phe Ile Lys Met Val Ser Phe Lys Ser Ile Leu Val Pro Tyr	
1	5 10 15
Ile Thr Leu Phe Leu Met Ser Gly Ala Val Phe Ala Gly Asp Thr Asp	
	20 25 30
Arg Glu Ala Gly Gly Pro Ser Gly Thr Val Gly Pro Ser Glu Ala Gly	
	35 40 45
Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu	
50	55 60
Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro	
65	70 75 80
Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly	
	85 90 95
Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu	
	100 105 110
Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro	

	115		120		125
Ser	Glu Arg Phe Gly Tyr Gln Leu Leu Trp Tyr Ser Arg Arg Ile Val				
	130		135		140
Ile	Phe Asn Glu Ile Tyr Leu Ser His Ile Tyr Glu His Ser Val Met				
	145		150		155
Ile	Leu Glu Arg Asp Arg Val Asn Asp Gly His Lys Asp Tyr Ile Glu				160
		165		170	
Glu	Lys Thr Lys Glu Lys Asn Lys Leu Lys Lys Glu Leu Glu Lys Cys				175
		180		185	
Phe	Pro Glu Gln Tyr Ser Leu Met Lys Lys Glu Glu Leu Ala Arg Ile				190
		195		200	
Ile	Asp Asn Ala Ser Thr Ile Ser Ser Lys Tyr Lys Leu Leu Val Asp				205
		210		215	
Glu	Ile Ser Asn Lys Ala Tyr Gly Thr Leu Glu Gly Pro Ala Ala Asp				220
		225		230	
Asp	Phe Asp His Phe Arg Asn Ile Trp Lys Ser Ile Val Pro Lys Asn				235
		245		250	
Met	Phe Leu Tyr Cys Asp Leu Leu Leu Lys His Leu Ile Arg Lys Phe				255
		260		265	
Tyr	Cys Asp Asn Thr Ile Asn Asp Ile Lys Lys Asn Phe Asp Asp Ile				270
		275		280	
Glu	Lys Leu Gly Cys Phe Gln Ala Arg Ser Phe Leu Pro Val Asn				285
		290		300	

&lt;210&gt; 24

&lt;211&gt; 592

&lt;212&gt; PRT

&lt;213&gt; Babesia microti

&lt;400&gt; 24

Met	Met Lys Phe Asn Ile Asp Lys Ile Ile Leu Ile Asn Leu Ile Val
1	5 10 15
Leu	Leu Asn Arg Asn Val Val Tyr Cys Val Asp Thr Asn Asn Ser Ser
	20 25 30
Leu	Ile Glu Ser Gln Pro Val Thr Thr Asn Ile Asp Thr Asp Asn Thr
	35 40 45
Ile	Thr Thr Asn Lys Tyr Thr Gly Thr Ile Ile Asn Ala Asn Ile Val
	50 55 60
Glu	Tyr Arg Glu Phe Glu Asp Glu Pro Leu Thr Ile Gly Phe Arg Tyr
65	70 75 80
Thr	Ile Asp Lys Ser Gln Gln Asn Lys Leu Ser His Pro Asn Lys Ile
	85 90 95
Asp	Lys Ile Lys Phe Ser Asp Tyr Ile Glu Phe Asp Asp Asn Ala
	100 105 110
Lys	Leu Pro Thr Asp Asn Val Ile Cys Ile Ser Ile Tyr Thr Cys Lys
	115 120 125
His	Asn Asn Pro Val Leu Ile Arg Phe Ser Cys Ser Ile Glu Lys Tyr
	130 135 140
Tyr	Tyr His Tyr Phe Tyr Ser Met Asn Asn Asp Thr Asn Lys Trp Asn
145	150 155 160
Asn	His Lys Leu Lys Tyr Asp Lys Thr Tyr Asn Glu Tyr Thr Asp Asn
	165 170 175
Asn	Gly Val Asn Tyr Tyr Lys Ile Tyr Tyr Ser Asp Lys Gln Asn Ser
	180 185 190

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Pro Thr Asn Gly Asn Glu Tyr Glu Asp Val Ala Leu Ala Arg Ile His
    195                                200                205
Cys Asn Glu Glu Arg Cys Ala Asn Val Lys Val Asp Lys Ile Lys Tyr
    210                                215                220
Lys Asn Leu Glu Ile Tyr Val Lys Gln Leu Gly Thr Ile Ile Asn Ala
    225                                230                235                240
Asn Ile Val Glu Tyr Leu Val Phe Glu Asp Glu Pro Leu Thr Ile Gly
    245                                250                255
Phe Arg Tyr Thr Ile Asp Lys Ser Gln Gln Asn Glu Leu Ser His Pro
    260                                265                270
Asn Lys Ile Tyr Lys Ile Lys Phe Ser Asp Tyr Ile Ile Glu Phe Asp
    275                                280                285
Asp Asp Ala Lys Leu Thr Thr Ile Gly Thr Val Glu Asp Ile Thr Ile
    290                                295                300
Tyr Thr Cys Lys His Asn Asn Pro Val Leu Ile Arg Phe Ser Cys Ser
    305                                310                315                320
Ile Glu Lys Tyr Tyr Tyr Tyr Tyr Phe Tyr Ser Met Asn Asn Asn Thr
    325                                330                335
Asn Lys Trp Asn Asn His Asn Leu Lys Tyr Asp Asn Arg Phe Lys Glu
    340                                345                350
His Ser Asp Lys Asn Gly Ile Asn Tyr Tyr Glu Ile Ser Ala Phe Lys
    355                                360                365
Trp Ser Phe Ser Cys Phe Phe Val Asn Lys Tyr Glu His Lys Glu Leu
    370                                375                380
Ala Arg Ile His Cys Asn Glu Glu Arg Cys Ala Asn Val Lys Val Asp
    385                                390                395                400
Lys Ile Lys Tyr Lys Asn Leu Glu Ile Tyr Val Lys Gln Leu Gly Thr
    405                                410                415
Ile Ile Asn Ala Asn Ile Val Glu Tyr Leu Val Phe Glu Asp Glu Pro
    420                                425                430
Leu Thr Ile Gly Phe Arg Tyr Thr Ile Asp Lys Ser Gln Gln Asn Glu
    435                                440                445
Leu Ser His Pro Asn Lys Ile Tyr Lys Ile Lys Phe Ser Asp Tyr Ile
    450                                455                460
Ile Glu Phe Asp Asp Asp Ala Lys Leu Thr Thr Ile Gly Thr Val Glu
    465                                470                475                480
Asp Ile Thr Ile Tyr Thr Cys Lys His Asn Asn Pro Val Leu Ile Arg
    485                                490                495
Phe Ser Cys Ser Ile Glu Lys Tyr Tyr Tyr Tyr Phe Tyr Ser Met
    500                                505                510
Asn Asn Asn Thr Asn Lys Trp Asn Asn His Asn Leu Lys Tyr Asp Asn
    515                                520                525
Arg Phe Lys Glu His Ser Asp Lys Asn Gly Ile Asn Tyr Tyr Glu Ile
    530                                535                540
Ser Ala Phe Lys Trp Ser Phe Ser Cys Phe Phe Val Asn Lys Tyr Glu
    545                                550                555                560
His Lys Glu Leu Ala Arg Ile His Cys Asn Glu Glu Lys Cys Val Asn
    565                                570                575
Val Lys Val Asp Asn Ile Gly Asn Lys Asn Leu Glu Ile Tyr Val Lys
    580                                585                590

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&lt;210&gt; 25

&lt;211&gt; 463

&lt;212&gt; PRT



## &lt;213&gt; Babesia microti

&lt;400&gt; 25

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Ile Ile Met Lys Ile Asn Ile Asp Asn Ile Ile Leu Ile Asn Leu Ile
1      5      10      15
Ile Leu Leu Asn Arg Asn Val Val Tyr Cys Val Asp Lys Asn Asp Val
20      25      30
Ser Leu Trp Lys Ser Lys Pro Ile Thr Thr Val Ser Thr Thr Asn Asp
35      40      45
Thr Ile Thr Asn Lys Tyr Thr Ser Thr Val Ile Asn Ala Asn Phe Ala
50      55      60
Ser Tyr Arg Glu Phe Glu Asp Arg Glu Pro Leu Thr Ile Gly Phe Glu
65      70      75      80
Tyr Met Ile Asp Lys Ser Gln Gln Asp Lys Leu Ser His Pro Asn Lys
85      90      95
Ile Asp Lys Ile Lys Ile Ser Asp Tyr Ile Ile Glu Phe Asp Asp Asn
100     105     110
Ala Lys Leu Pro Thr Gly Ser Val Asn Asp Ile Ser Ile Ile Thr Cys
115     120     125
Lys His Asn Asn Pro Val Leu Ile Arg Phe Ser Cys Leu Ile Glu Gly
130     135     140
Ser Ile Cys Tyr Tyr Phe Tyr Leu Leu Asn Asn Asp Thr Asn Lys Trp
145     150     155     160
Asn Asn His Lys Leu Lys Tyr Asp Lys Thr Tyr Asn Glu His Thr Asp
165     170     175
Asn Asn Gly Ile Asn Tyr Tyr Lys Ile Asp Tyr Ser Glu Ser Thr Glu
180     185     190
Pro Thr Thr Glu Ser Thr Thr Cys Phe Cys Phe Arg Lys Lys Asn His
195     200     205
Lys Ser Glu Arg Lys Glu Leu Glu Asn Tyr Lys Tyr Glu Gly Thr Glu
210     215     220
Leu Ala Arg Ile His Cys Asn Lys Gly Lys Cys Val Lys Leu Gly Asp
225     230     235     240
Ile Lys Ile Lys Asp Lys Asn Leu Glu Ile Tyr Val Lys Gln Leu Met
245     250     255
Ser Val Asn Thr Pro Val Asn Phe Asp Asn Pro Thr Ser Ile Asn Leu
260     265     270
Pro Thr Val Ser Thr Thr Asn Asp Thr Ile Thr Asn Lys Tyr Thr Gly
275     280     285
Thr Ile Ile Asn Ala Asn Ile Val Glu Tyr Cys Glu Phe Glu Asp Glu
290     295     300
Pro Leu Thr Ile Gly Phe Arg Tyr Thr Ile Asp Lys Ser Gln Gln Asn
305     310     315     320
Lys Leu Ser His Pro Asn Lys Ile Asp Lys Ile Lys Phe Phe Asp Tyr
325     330     335
Ile Ile Glu Phe Asp Asp Asp Val Lys Leu Pro Thr Ile Gly Thr Val
340     345     350
Asn Ile Ile Tyr Ile Tyr Thr Cys Glu His Asn Asn Pro Val Leu Val
355     360     365
Glu Phe Ile Val Ser Ile Glu Glu Ser Tyr Tyr Phe Tyr Phe Tyr Ser
370     375     380
Met Asn Asn Asn Thr Asn Lys Trp Asn Asn His Lys Leu Lys Tyr Asp
385     390     395     400
Lys Arg Phe Lys Lys Tyr Thr Lys Asn Gly Ile Asn Cys Tyr Glu Tyr

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				405					410				415			
Val	Leu	Arg	Lys	Cys	Ser	Ser	Tyr	Thr	Arg	Lys	Asn	Glu	Tyr	Glu	His	
			420					425					430			
Lys	Glu	Leu	Ala	Arg	Ile	His	Cys	Asn	Glu	Glu	Lys	Cys	Val	Asn	Val	
		435					440					445				
Lys	Val	Asp	Asn	Ile	Glu	Lys	Lys	Asn	Leu	Glu	Ile	Tyr	Val	Lys		
	450					455					460					

&lt;210&gt; 26

&lt;211&gt; 297

&lt;212&gt; PRT

&lt;213&gt; Babesia microti

&lt;400&gt; 26

Arg	Ala	Ala	Arg	Ala	Asp	Tyr	Tyr	Lys	Tyr	Leu	Val	Asp	Glu	Tyr	Ser	
1				5					10					15		
Ser	Pro	Arg	Glu	Glu	Arg	Glu	Leu	Ala	Arg	Val	His	Cys	Asn	Glu	Glu	
		20						25					30			
Lys	Cys	Val	Lys	Leu	Asp	Gly	Ile	Lys	Phe	Lys	Asp	Lys	Asn	Leu	Glu	
	35					40						45				
Ile	Tyr	Val	Lys	Gln	Leu	Met	Ser	Val	Asn	Thr	Pro	Val	Val	Phe	Asp	
	50					55					60					
Asn	Asn	Thr	Leu	Ile	Asn	Pro	Thr	Ser	Ser	Ser	Gly	Ala	Thr	Asp	Asp	
65					70					75					80	
Ile	Thr	Tyr	Glu	Leu	Ser	Val	Glu	Ser	Gln	Pro	Val	Pro	Thr	Asn	Ile	
				85					90					95		
Asp	Thr	Gly	Asn	Asn	Ile	Thr	Thr	Asn	Thr	Ser	Asn	Asn	Asn	Leu	Ile	
			100					105						110		
Lys	Ala	Lys	Phe	Leu	Tyr	Asn	Phe	Asn	Leu	Pro	Gly	Lys	Pro	Ser	Thr	
		115					120					125				
Gly	Leu	Phe	Glu	Tyr	Thr	Ile	Asp	Lys	Ser	Glu	Gln	Asn	Lys	Leu	Ser	
	130					135					140					
His	Pro	Asn	Lys	Ile	Asp	Lys	Ile	Lys	Phe	Ser	Asp	Tyr	Ile	Ile	Glu	
145					150					155					160	
Phe	Asp	Asp	Asp	Ala	Lys	Leu	Pro	Thr	Ile	Gly	Thr	Val	Asn	Ile	Ile	
				165					170					175		
Ser	Ile	Ile	Thr	Cys	Lys	His	Asn	Asn	Pro	Val	Leu	Val	Glu	Phe	Ile	
			180					185					190			
Val	Ser	Thr	Glu	Ile	Tyr	Cys	Tyr	Asn	Tyr	Phe	Tyr	Ser	Met	Asn		
		195					200					205				
Asn	Asn	Thr	Asn	Lys	Trp	Asn	Asn	His	Lys	Leu	Lys	Tyr	Asp	Lys	Arg	
	210					215						220				
Tyr	Lys	Glu	Glu	Tyr	Thr	Asp	Asp	Asn	Gly	Ile	Asn	Tyr	Tyr	Lys	Leu	
225					230					235					240	
Asn	Asp	Ser	Glu	Pro	Thr	Glu	Ser	Thr	Glu	Ser	Thr	Thr	Cys	Phe	Cys	
				245					250					255		
Phe	Arg	Lys	Lys	Asn	His	Lys	Tyr	Glu	Asn	Glu	Arg	Thr	Ala	Leu	Ala	
			260					265					270			
Lys	Glu	His	Cys	Asn	Glu	Glu	Arg	Cys	Val	Lys	Val	Asp	Asn	Ile	Lys	
		275					280					285				
Asp	Asn	Asn	Leu	Glu	Ile	Tyr	Leu	Lys								
	290					295										

&lt;210&gt; 27

<211> 121  
 <212> PRT  
 <213> Babesia microti

<400> 27  
 Leu Trp Phe Ile Lys Met Val Ser Phe Lys Ser Ile Leu Val Pro Tyr  
 1 5 10 15  
 Ile Thr Leu Phe Leu Met Ser Gly Ala Val Phe Ala Ser Asp Thr Asp  
 20 25 30  
 Pro Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly  
 35 40 45  
 Gly Pro Ser Gly Thr Val Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu  
 50 55 60  
 Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro Ser Glu Ala Gly Gly Pro  
 65 70 75 80  
 Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro Ser Glu Ala Gly  
 85 90 95  
 Trp Ser Ser Glu Arg Phe Gly Tyr Gln Leu Leu Pro Tyr Ser Arg Arg  
 100 105 110  
 Ile Val Thr Phe Asn Glu Val Cys Leu  
 115 120

<210> 28  
 <211> 267  
 <212> PRT  
 <213> Babesia microti

<400> 28  
 Leu Trp Phe Ile Lys Met Val Ser Phe Lys Ser Ile Leu Val Pro Tyr  
 1 5 10 15  
 Ile Thr Leu Phe Leu Met Ser Gly Ala Val Phe Ala Ser Asp Thr Asp  
 20 25 30  
 Pro Glu Ala Gly Gly Pro Ser Gly Thr Val Gly Pro Ser Glu Ala Gly  
 35 40 45  
 Gly Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro Ser Glu  
 50 55 60  
 Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro  
 65 70 75 80  
 Ser Glu Ala Gly Trp Ser Ser Glu Arg Phe Gly Tyr Gln Leu Leu Pro  
 85 90 95  
 Tyr Ser Arg Arg Ile Val Thr Phe Asn Glu Val Cys Leu Ser Tyr Ile  
 100 105 110  
 Tyr Lys His Ser Val Met Ile Leu Glu Arg Asp Arg Val Asn Asp Gly  
 115 120 125  
 His Lys Asp Tyr Ile Glu Glu Lys Thr Lys Glu Lys Asn Lys Leu Lys  
 130 135 140  
 Lys Glu Leu Glu Lys Cys Phe Pro Glu Gln Tyr Ser Leu Met Lys Lys  
 145 150 155 160  
 Glu Glu Leu Ala Arg Ile Phe Asp Asn Ala Ser Thr Ile Ser Ser Lys  
 165 170 175  
 Tyr Lys Leu Leu Val Asp Glu Ile Ser Asn Lys Ala Tyr Gly Thr Leu  
 180 185 190  
 Glu Gly Pro Ala Ala Asp Asn Phe Asp His Phe Arg Asn Ile Trp Lys  
 195 200 205

Ser Ile Val Leu Lys Asp Met Phe Ile Tyr Cys Asp Leu Leu Leu Gln  
 210 215 220  
 His Leu Ile Tyr Lys Phe Tyr Tyr Asp Asn Thr Ile Asn Asp Ile Lys  
 225 230 235 240  
 Lys Asn Phe Asp Glu Ser Lys Ser Lys Ala Leu Val Leu Arg Asp Lys  
 245 250 255  
 Ile Thr Lys Lys Asp Val Tyr Val Asn Asp His  
 260 265

<210> 29  
 <211> 16  
 <212> PRT  
 <213> Babesia microti

<400> 29  
 Ala Trp Thr Phe Ser Val Leu Glu Leu Gln Glu Phe Ser Tyr Thr Val  
 1 5 10 15

<210> 30  
 <211> 465  
 <212> PRT  
 <213> Babesia microti

<400> 30  
 Met Leu Thr Phe Gly Asn Ile Arg Phe His Asn Ile Asn Leu Pro Pro  
 1 5 10 15  
 Phe Ser Leu Gly Ile Ile His Ser Ile Thr Val Glu Lys Ala Ile Asn  
 20 25 30  
 Ser Glu Asp Phe Asp Gly Ile Gln Thr Leu Leu Gln Val Ser Ile Ile  
 35 40 45  
 Ala Ser Tyr Gly Pro Ser Gly Asp Tyr Ser Ser Phe Val Phe Thr Pro  
 50 55 60  
 Val Val Thr Ala Asp Thr Asn Val Phe Tyr Lys Leu Glu Thr Asp Phe  
 65 70 75 80  
 Lys Leu Asp Val Asp Val Ile Thr Lys Thr Ser Leu Glu Leu Pro Thr  
 85 90 95  
 Ser Val Pro Gly Phe His Tyr Thr Glu Thr Ile Tyr Gln Gly Thr Glu  
 100 105 110  
 Leu Ser Lys Phe Ser Lys Pro Gln Cys Lys Leu Asn Asp Pro Pro Ile  
 115 120 125  
 Thr Thr Gly Ser Gly Leu Gln Ile Ile His Asp Gly Leu Asn Asn Ser  
 130 135 140  
 Thr Ile Ile Thr Asn Lys Glu Val Asn Val Asp Gly Thr Asp Leu Val  
 145 150 155 160  
 Phe Phe Glu Leu Leu Pro Pro Ser Asp Gly Ile Pro Thr Leu Arg Ser  
 165 170 175  
 Lys Leu Phe Pro Val Leu Lys Ser Ile Pro Met Ile Ser Thr Gly Val  
 180 185 190  
 Asn Glu Leu Leu Leu Glu Val Leu Glu Asn Pro Ser Phe Pro Ser Ala  
 195 200 205  
 Ile Ser Asn Tyr Thr Gly Leu Thr Gly Arg Leu Asn Lys Leu Leu Thr  
 210 215 220  
 Val Leu Asp Gly Ile Val Asp Ser Ala Ile Ser Val Lys Thr Thr Glu  
 225 230 235 240

															<210>	31
															<211>	128
															<212>	PRT
															<213>	Babesia microti
															<400>	31
Leu	Trp	Phe	Ile	Lys	Met	Val	Ser	Phe	Lys	Ser	Ile	Leu	Val	Pro	Tyr	
1				5					10					15		
Ile	Thr	Leu	Phe	Leu	Met	Ser	Gly	Ala	Val	Phe	Ala	Ser	Asp	Thr	Asp	
			20					25					30			
Pro	Glu	Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr	Val	
		35					40					45				
Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Gly	
	50					55					60					
Thr	Gly	Trp	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	
65					70					75					80	
Ser	Glu	Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr	Gly	
				85					90					95		
Trp	Pro	Ser	Gly	Thr	Gly	Trp	Pro	Ser	Glu	Ala	Gly	Trp	Ser	Ser	Glu	
			100					105					110			
Arg	Phe	Gly	Tyr	Gln	Leu	Leu	Pro	Tyr	Ser	Arg	Arg	Ile	Val	Ile	Phe	
		115					120					125				

<210> 32  
 <211> 245  
 <212> PRT  
 <213> Babesia microti

<400> 32  
 Gln Glu Cys Cys Leu Val Val Lys Asp Lys Val Ile Arg His Ala Ala  
 1 5 10 15  
 Phe Ala Ala Thr Ile Ile Ile Arg Arg Arg Arg Val Ser Phe Ile Ile  
 20 25 30  
 Leu Gly Leu Ile Ile Ala Thr Met Thr Pro Phe Phe Thr Lys Val Phe  
 35 40 45  
 Phe Phe Gln Arg Cys Leu Ser Ile Met Arg Phe Tyr Ser Ser Leu Pro  
 50 55 60  
 Thr Phe Ile Leu Ile Glu Ile Ala Met Leu Phe Phe Met Ser Val Thr  
 65 70 75 80  
 Cys Phe Leu Arg Cys Leu Ser Ile Ile Arg Phe Tyr Ser Ser Ile Ser  
 85 90 95  
 Thr Phe Ile Leu Ile Asp Phe Val Met Pro Phe Phe Thr Leu Phe Thr  
 100 105 110  
 Tyr Phe Leu Arg Cys Leu Ser Ile Met Arg Phe Ser Phe Ser Leu Leu  
 115 120 125  
 Thr Phe Ile Arg Ile Asp Phe Val Met Pro Phe Phe Met Ser Val Thr  
 130 135 140  
 Cys Phe Leu Arg Cys Leu Ser Ile Ile Arg Phe Tyr Ser Ser Ile Ser  
 145 150 155 160  
 Thr Phe Ile Leu Ile Asp Phe Val Met Pro Phe Phe Thr Leu Phe Thr  
 165 170 175  
 Tyr Phe Leu Arg Cys Leu Ser Ile Ile Arg Phe Tyr Ser Ser Ile Ser  
 180 185 190  
 Thr Phe Ile Leu Ile Asp Phe Val Met Pro Phe Phe Thr Leu Phe Thr  
 195 200 205  
 Tyr Phe Leu Arg Cys Leu Ser Ile Met Arg Phe Ser Phe Ser Leu Leu  
 210 215 220  
 Thr Phe Ile Arg Ile Gly Phe Ala Met Pro Phe Phe Thr Leu Phe Ile  
 225 230 235 240  
 Tyr Phe Leu Cys Arg  
 245

<210> 33  
 <211> 293  
 <212> PRT  
 <213> Babesia microti

<400> 33  
 Thr Ala Phe Ala Ala Phe Leu Ala Phe Gly Asn Ile Ser Pro Val Leu  
 1 5 10 15  
 Ser Ala Gly Gly Ser Gly Gly Asn Gly Gly Asn Gly Gly Gly His Gln  
 20 25 30  
 Glu Gln Asn Asn Ala Asn Asp Ser Ser Asn Pro Thr Gly Ala Gly Gly  
 35 40 45  
 Gln Pro Asn Asn Glu Ser Lys Lys Lys Ala Val Lys Leu Asp Leu Asp  
 50 55 60  
 Leu Met Lys Glu Thr Lys Asn Val Cys Thr Thr Val Asn Thr Lys Leu

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65          70          75          80
Val Gly Lys Ala Lys Ser Lys Leu Asn Lys Leu Glu Gly Glu Ser His
          85          90          95
Lys Glu Tyr Val Ala Glu Lys Thr Lys Glu Ile Asp Glu Lys Asn Lys
          100          105          110
Lys Phe Asn Glu Asn Leu Val Lys Ile Glu Lys Lys Lys Lys Ile Lys
          115          120          125
Val Pro Ala Asp Thr Gly Ala Glu Val Asp Ala Val Asp Asp Gly Val
          130          135          140
Ala Gly Ala Leu Ser Asp Leu Ser Ser Asp Ile Ser Ala Ile Lys Thr
          145          150          155          160
Leu Thr Asp Asp Val Ser Glu Lys Val Ser Glu Asn Leu Lys Asp Asp
          165          170          175
Glu Ala Ser Ala Thr Glu His Thr Asp Ile Lys Glu Lys Ala Thr Leu
          180          185          190
Leu Gln Glu Ser Cys Asn Gly Ile Gly Thr Ile Leu Asp Lys Leu Ala
          195          200          205
Glu Tyr Leu Asn Asn Asp Thr Thr Gln Asn Ile Lys Lys Glu Phe Asp
          210          215          220
Glu Arg Lys Lys Asn Leu Thr Ser Leu Lys Thr Lys Val Glu Asn Lys
          225          230          235          240
Asp Glu Asp Tyr Val Asp Val Thr Met Thr Ser Lys Thr Asp Leu Ile
          245          250          255
Ile His Cys Leu Thr Cys Thr Asn Asp Ala His Gly Leu Phe Asp Phe
          260          265          270
Glu Ser Lys Ser Leu Ile Lys Gln Thr Phe Lys Leu Arg Ser Lys Asp
          275          280          285
Glu Gly Glu Leu Cys
          290

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<210> 34
<211> 431
<212> PRT
<213> Babesia microti

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          <400> 34
Gly Pro Lys Met Lys Val Asn Ser Ala Asn Leu Asp Phe Arg Trp Ala
1          5          10          15
Met Tyr Met Leu Asn Ser Lys Ile His Leu Ile Glu Ser Ser Leu Ile
          20          25          30
Asp Asn Phe Thr Leu Asp Asn Pro Ser Ala Tyr Glu Ile Leu Arg Val
          35          40          45
Ser Tyr Asn Ser Asn Glu Phe Gln Val Gln Ser Pro Gln Asn Ile Asn
          50          55          60
Asn Glu Met Glu Ser Ser Thr Pro Glu Ser Asn Ile Ile Trp Val Val
65          70          75          80
His Ser Asp Val Ile Met Lys Arg Phe Asn Cys Lys Asn Arg Lys Ser
          85          90          95
Leu Ser Thr His Ser Leu Thr Glu Asn Asp Ile Leu Lys Phe Gly Arg
          100          105          110
Ile Glu Leu Ser Val Lys Cys Ile Ile Met Gly Ala Gly Ile Thr Ala
          115          120          125
Ser Asp Leu Asn Leu Lys Gly Leu Gly Phe Ile Ser Pro Asp Lys Gln
          130          135          140

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Ser Thr Asn Val Cys Asn Tyr Phe Glu Asp Met His Glu Ser Tyr His  
 145 150 155 160  
 Ile Leu Asp Thr Gln Arg Ala Ser Asp Cys Val Ser Asp Asp Gly Ala  
 165 170 175  
 Asp Ile Asp Ile Ser Asn Phe Asp Met Val Gln Asp Gly Asn Ile Asn  
 180 185 190  
 Ser Val Asp Ala Asp Ser Glu Thr Cys Met Ala Asn Ser Gly Val Thr  
 195 200 205  
 Val Asn Asn Thr Glu Asn Val Ser Asn Ser Glu Asn Phe Gly Lys Leu  
 210 215 220  
 Lys Ser Leu Val Ser Thr Thr Thr Pro Leu Cys Arg Ile Cys Leu Cys  
 225 230 235 240  
 Gly Glu Ser Asp Pro Gly Pro Leu Val Thr Pro Cys Asn Cys Lys Gly  
 245 250 255  
 Ser Leu Asn Tyr Val His Leu Glu Cys Leu Arg Thr Trp Ile Lys Gly  
 260 265 270  
 Arg Leu Ser Ile Val Lys Asp Asp Asp Ala Ser Phe Phe Trp Lys Glu  
 275 280 285  
 Leu Ser Cys Glu Leu Cys Gly Lys Pro Tyr Pro Ser Val Leu Gln Val  
 290 295 300  
 Asp Asp Thr Glu Thr Asn Leu Met Asp Ile Lys Lys Pro Asp Ala Pro  
 305 310 315 320  
 Tyr Val Val Leu Glu Met Arg Ser Asn Ser Gly Asp Gly Cys Phe Val  
 325 330 335  
 Val Ser Val Ala Lys Asn Lys Ala Ile Ile Gly Arg Gly His Glu Ser  
 340 345 350  
 Asp Val Arg Leu Ser Asp Ile Ser Val Ser Arg Met His Ala Ser Leu  
 355 360 365  
 Glu Leu Asp Gly Gly Lys Val Val Ile His Asp Gln Gln Ser Lys Phe  
 370 375 380  
 Gly Thr Leu Val Arg Ala Lys Ala Pro Phe Ser Met Pro Ile Lys Gly  
 385 390 395 400  
 Pro Ile Cys Leu Gln Val Ser Ile Phe Phe Leu Asn Leu Lys Ile Ser  
 405 410 415  
 Thr His Ser Leu Thr Met Glu Arg Gly Met Glu His Val Leu Leu  
 420 425 430

<210> 35

<211> 6

<212> PRT

<213> Babesia microti

<220>

<221> VARIANT

<222> (1)...(1)

<223> Xaa = Glutamic Acid or Glycine

<221> VARIANT

<222> (2)...(2)

<223> Xaa = Alanine or Threonine

<221> VARIANT

<222> (3)...(3)

<223> Xaa = Glycine or Valine



<221> VARIANT  
 <222> (4)...(4)  
 <223> Xaa = Tryptophan or Glycine

<221> VARIANT  
 <222> (5)...(5)  
 <223> Xaa = Proline or Serine

<400> 35

Xaa Xaa Xaa Xaa Xaa Ser

1

5

<210> 36  
 <211> 32  
 <212> PRT  
 <213> Babesia microti

<220>  
 <221> VARIANT  
 <222> (6)...(6)  
 <223> Xaa = Methionine or Isoleucine

<221> VARIANT  
 <222> (9)...(9)  
 <223> Xaa = Tyrosine or Serine

<221> VARIANT  
 <222> (10)...(10)  
 <223> Xaa = Serine or Phenylalanine

<221> VARIANT  
 <222> (12)...(12)  
 <223> Xaa = Leucine or Isoleucine

<221> VARIANT  
 <222> (13)...(13)  
 <223> Xaa = Proline, Serine or Leucine

<221> VARIANT  
 <222> (17)...(17)  
 <223> Xaa = Leucine or Arginine

<221> VARIANT  
 <222> (19)...(19)  
 <223> Xaa = Glutamic Acid, Aspartic Acid or Glycine

<221> VARIANT  
 <222> (20)...(20)  
 <223> Xaa = Isoleucine or Phenylalanine

<221> VARIANT  
 <222> (21)...(21)  
 <223> Xaa = Alanine or Valine

<221> VARIANT  
 <222> (23)...(23)  
 <223> Xaa = Leucine or Proline

<221> VARIANT  
 <222> (26)...(26)  
 <223> Xaa = Methionine or Threonine

<221> VARIANT  
 <222> (27)...(27)  
 <223> Xaa = Serine or Leucine

<221> VARIANT  
 <222> (28)...(28)  
 <223> Xaa = Valine or Phenylalanine

<221> VARIANT  
 <222> (29)...(29)  
 <223> Xaa = Threonine or Isoleucine

<221> VARIANT  
 <222> (30)...(30)  
 <223> Xaa = Cysteine or Tyrosine

<400> 36  
 Arg Cys Leu Ser Ile Xaa Arg Phe Xaa Xaa Ser Xaa Xaa Thr Phe Ile  
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 Xaa Ile Xaa Xaa Xaa Met Xaa Phe Phe Xaa Xaa Xaa Xaa Xaa Phe Leu  
 20 25 30

<210> 37  
 <211> 1820  
 <212> DNA  
 <213> Babesia microti

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 gacctccaat tttggctcca ccacaaacaa gtctgacata ttgagcaaaa catattgatt 120  
 taattttaaag aacagacatc tggccattca tgctaagagg tctcttcatt gttgagtggg 180  
 aacagccttg tatacgggct tacaacacaa tggaaaaaca ccttgtagaa gagatcatgc 240  
 ttcactcagt gctagatggt gatgccagtg atttgcttgg ggtagtaagc cagtactaga 300  
 atacaggatg cacttggact ggcaaacaga atacacctgt tgcctgaata gaaactcaca 360  
 gagaccgat gctgtctggt accaacaagg ttctgcttct gggaagaatt tacagatatt 420  
 atgttgggaa aagagacacc ctgtatgtgt agaaacaaag aagcacagat cttagatgaa 480  
 ttaatataag aatgatactt ctctagaaac aaatgtagtt accaactata ttccagaacc 540  
 caatgcggat tcagaatctg tacatgttga aatccaggaa catgataaca tcaatccaca 600  
 agacgcttgc gatagtgagc cgctcgaaca aatggattct gataccaggg tgttgcccga 660  
 aagtttggat gagggggtac cacaccaatt ctctagatta gggcaccact cagacatggc 720  
 atctgatata aatgatgaag aaccatcatt taaaatcggc gagaatgaca taattcaacc 780  
 accctgggaa gatacagctc cataccattc aatagatgat gaagagcttg acaacttaat 840  
 gagactaacg gcgcaagaaa caagtgcga tcatgaagaa gggaatggca aactcaatac 900  
 gaataaaagt gagaagactg aaagaaaatc gcatgatact cagacaccgc aagaaatata 960  
 tgaagagctt gacaacttac tgagactaac ggcacaagaa atatatgaag agcgtaaaga 1020

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agggcatggc aaacccaata cgaataaaaag tgagaaggct gaaagaaaat cgcatagatac 1080
tcagacaacg caagaaatat gtgaagagtg tgaagaaggg catgacaaaa tcaataagaa 1140
taaaagtggg aatgctggaa taaaatcgta tgataactcag acaacgcaag aaatatgtga 1200
agagtgtgaa gaagggcatg acaaaatcaa taagaataaa agtggaaatg ctggaataaa 1260
atcgtatgat actcagacac cgcaggaaac aagtgcgct catgaagaag ggcatgacaa 1320
aatcaatacg aataaaaagtg agaaggctga aagaaaatcg catgatactc agacaacgca 1380
agaaatatgt gaagagtgtg aagaagggca tgacaaaatc aataagaata aaagtggaaa 1440
tgctggaata aaatcgtatg atactcagac accgcaggaa acaagtgcg ctcataaaga 1500
agagcatggc aatctcaata agaataaaaag tgggaaggct ggaataaaaat cgcataatac 1560
tcagacaccg ctgaaaaaaa aagacttttg taaagaaggg tgtcatgggt gcaataataa 1620
gcccgaggat aatgaaagag acccgtcgtc gcctgatgat gatgggtggc gcgaatgcgg 1680
catgacgaat cactttgtct ttgactacaa gacaacactc ttgttaaaga gcctcaagac 1740
tgaaacatcc actcattatt acattgccat ggctgcaatt ttactatatt cattattccc 1800
atgcatgttt aaggctttcc 1820

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<210> 38

<211> 445

<212> PRT

<213> Babesia microti

<400> 38

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Tyr Lys Asn Asp Thr Ser Leu Glu Thr Asn Val Val Thr Asn Tyr Ile
1      5      10      15
Pro Glu Pro Asn Ala Asp Ser Glu Ser Val His Val Glu Ile Gln Glu
20     25     30
His Asp Asn Ile Asn Pro Gln Asp Ala Cys Asp Ser Glu Pro Leu Glu
35     40     45
Gln Met Asp Ser Asp Thr Arg Val Leu Pro Glu Ser Leu Asp Glu Gly
50     55     60
Val Pro His Gln Phe Ser Arg Leu Gly His His Ser Asp Met Ala Ser
65     70     75     80
Asp Ile Asn Asp Glu Glu Pro Ser Phe Lys Ile Gly Glu Asn Asp Ile
85     90     95
Ile Gln Pro Pro Trp Glu Asp Thr Ala Pro Tyr His Ser Ile Asp Asp
100    105    110
Glu Glu Leu Asp Asn Leu Met Arg Leu Thr Ala Gln Glu Thr Ser Asp
115    120    125
Asp His Glu Glu Gly Asn Gly Lys Leu Asn Thr Asn Lys Ser Glu Lys
130    135    140
Thr Glu Arg Lys Ser His Asp Thr Gln Thr Pro Gln Glu Ile Tyr Glu
145    150    155    160
Glu Leu Asp Asn Leu Arg Leu Thr Ala Gln Glu Ile Tyr Glu Glu
165    170    175
Arg Lys Glu Gly His Gly Lys Pro Asn Thr Asn Lys Ser Glu Lys Ala
180    185    190
Glu Arg Lys Ser His Asp Thr Gln Thr Thr Gln Glu Ile Cys Glu Glu
195    200    205
Cys Glu Glu Gly His Asp Lys Ile Asn Lys Asn Lys Ser Gly Asn Ala
210    215    220
Gly Ile Lys Ser Tyr Asp Thr Gln Thr Thr Gln Glu Ile Cys Glu Glu
225    230    235    240
Cys Glu Glu Gly His Asp Lys Ile Asn Lys Asn Lys Ser Gly Asn Ala
245    250    255
Gly Ile Lys Ser Tyr Asp Thr Gln Thr Pro Gln Glu Thr Ser Asp Ala

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	260		265		270										
His	Glu	Glu	Gly	His	Asp	Lys	Ile	Asn	Thr	Asn	Lys	Ser	Glu	Lys	Ala
	275				280							285			
Glu	Arg	Lys	Ser	His	Asp	Thr	Gln	Thr	Thr	Gln	Glu	Ile	Cys	Glu	Glu
	290				295						300				
Cys	Glu	Glu	Gly	His	Asp	Lys	Ile	Asn	Lys	Asn	Lys	Ser	Gly	Asn	Ala
305					310					315					320
Gly	Ile	Lys	Ser	Tyr	Asp	Thr	Gln	Thr	Pro	Gln	Glu	Thr	Ser	Asp	Ala
				325					330					335	
His	Glu	Glu	Glu	His	Gly	Asn	Leu	Asn	Lys	Asn	Lys	Ser	Gly	Lys	Ala
			340					345					350		
Gly	Ile	Lys	Ser	His	Asn	Thr	Gln	Thr	Pro	Leu	Lys	Lys	Lys	Asp	Phe
	355						360					365			
Cys	Lys	Glu	Gly	Cys	His	Gly	Cys	Asn	Asn	Lys	Pro	Glu	Asp	Asn	Glu
	370					375					380				
Arg	Asp	Pro	Ser	Ser	Pro	Asp	Asp	Asp	Gly	Gly	Cys	Glu	Cys	Gly	Met
385					390					395					400
Thr	Asn	His	Phe	Val	Phe	Asp	Tyr	Lys	Thr	Thr	Leu	Leu	Leu	Lys	Ser
				405					410					415	
Leu	Lys	Thr	Glu	Thr	Ser	Thr	His	Tyr	Tyr	Ile	Ala	Met	Ala	Ala	Ile
			420					425					430		
Phe	Thr	Ile	Ser	Leu	Phe	Pro	Cys	Met	Phe	Lys	Ala	Phe			
	435						440					445			

<210> 39

<211> 32

<212> PRT

<213> Babesia microti

<220>

<221> VARIANT

<222> (3)...(3)

<223> Xaa = Glycine or Aspartic Acid

<221> VARIANT

<222> (5)...(5)

<223> Xaa = Proline or Isoleucine

<221> VARIANT

<222> (7)...(7)

<223> Xaa = Lysine or Threonine

<221> VARIANT

<222> (11)...(11)

<223> Xaa = Glutamic Acid or Glycine

<221> VARIANT

<222> (12)...(12)

<223> Xaa = Lysine or Asparagine

<221> VARIANT

<222> (14)...(14)

<223> Xaa = Glutamic Acid or Glycine

<221> VARIANT  
 <222> (15)...(15)  
 <223> Xaa = Isoleucine or Arginine

<221> VARIANT  
 <222> (18)...(18)  
 <223> Xaa = Histidine or Tyrosine

<221> VARIANT  
 <222> (23)...(23)  
 <223> Xaa = Threonine or Proline

<221> VARIANT  
 <222> (26)...(26)  
 <223> Xaa = Isoleucine or Threonine

<221> VARIANT  
 <222> (27)...(27)  
 <223> Xaa = Cysteine or Serine

<221> VARIANT  
 <222> (28)...(28)  
 <223> Xaa = Aspartic Acid or Glutamic Acid

<221> VARIANT  
 <222> (29)...(29)  
 <223> Xaa = Glutamic Acid or Alanine

<221> VARIANT  
 <222> (30)...(30)  
 <223> Xaa = Cysteine or Histidine

<400> 39  
 Gly His Xaa Lys Xaa Asn Xaa Asn Lys Ser Xaa Xaa Ala Xaa Xaa Lys  
       1                  5                  10                  15  
 Ser Xaa Asp Thr Gln Thr Xaa Gln Glu Xaa Xaa Xaa Xaa Xaa Glu Glu  
       20                          25                          30

<210> 40  
 <211> 2430  
 <212> DNA  
 <213> Babesia microti

<400> 40  
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 gtaccactaa tgatactatt acaaatacac acactactaa tgtaattaat gccaatctta 120  
 ttggccactt taattataag gatagggaac ctttaacaat agtattttgta tacatgatcg 180  
 atgaatcaga acaaaaataaa ttatcacatc cgaataaaaat tgataaaaatc aaaattttctg 240  
 attatataat tgaatttgat gacaatgcta aattaccaac tggtagtggt attgatttaa 300  
 acatctatac ttgcaaacat aataatccag tattaattga attttatgtt tctatagaag 360  
 gatcttttctg ctattatttc tctcattgaa taatgatata aatgaatgga ataatacaca 420  
 aataaaatat gataaaaaat ataaagaata tacggacatg aatgggtattc attattatta 480  
 tattgatggt agtttacttg taagtggcga agttacatct aattttcggt atatttctaa 540  
 agaatatgaa tatgagcata caggattagt aaaaaaatat tgtaatgaag aaagatgtgt 600

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aaaattggat aacattaaga taaaggataa taatttggaa atttatgtga aataatttaa 660
tgaagtataa tattatttat aataattcaa agattaatat aatcaattat tataattaca 720
aaaataatta attgtagaat attatattat taatcaattc agattataaa tacatatttt 780
tacatacatt tcaattttaa cattcaaatt aatgtcattt ttatctacat tattataatt 840
ataactataa tattcattaa atactattaa aaaaaatatc ctctacatta tattaattat 900
tatagtatgt cattatataa catattcaca acgtataaca aatcaatcat taacatatac 960
atatatgata tcattaataa tcaatattta attgatacaa taatcaatag tcatctgtaa 1020
tataatcatt gtatactaatt ttattataaa ttattacaaa atacactctt ttacttcatt 1080
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tatttccata tttatcccaa tttcttcatt taagactgag atgttcgttc gttcatacat 1200
aaataatgtg taaattttgt aatatataat aatgtataca tctgggtatta catctatttt 1260
gtaataaata ttaaaaaaac gggttaaagt agtgccctaa ttccaggaat tattacatta 1320
gaaactttgg tgattttagt gatttcggtg atcattgaaa gaaatgggtt gaaacttgca 1380
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aattcttctg ctgcactatt caactcctta atcatgtcct caaatgagt gttataatct 1500
ccatcctttt tagtgatctt atccctcaaa actaaagctt tagatttgga ttcgtcaaaa 1560
tttttcttga tatcattaac ggtattgtca taatagaatt tatagattaa atgttgtaat 1620
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tcttctttct tcataaggga atattgttca ggaaaacatt ttccaattc ttttttcaat 1860
ttattcttct ccttgggttt ttcttcaatg tagtctttat gaccatcgtt caccctatct 1920
cgttccaata tcataacact atgtttgtat atataagata aacaaacttc attaaatata 1980
actattcttc tagaatacgg aagaagctga tatccaaatc gttcactaga ccaaccagct 2040
tactaggcc aaccagttcc actaggccaa ccagttccac taggcccacc agcttcacta 2100
ggcccaccag cttcactagg cccaccagct tcactaggcc caccagcttc actaggccaa 2160
ccagttccac taggcccacc agcttcacta ggcccaccag cttcactggg cccaacagtt 2220
ccactaggcc caccagcttc actaggccaa ccagcttcgg gatcggtatc acttgcaaag 2280
acagcaccgc tcattaaaaa gagtgtaata taaggaaacta atattgattt aaatgacacc 2340
atctttataa accatagtta ttggtacatt attagtacat tattgggtata tgattggtac 2400
gtggtagtga ttgtggtgct gcactagtt 2430

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<210> 41

<211> 128

<212> PRT

<213> Babesia microti

<400> 41

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Tyr Cys Val Asp Lys Asn Asp Val Ser Leu Trp Lys Ser Lys Pro Ile
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Thr Thr Val Ser Thr Thr Asn Asp Thr Ile Thr Asn Thr His Thr Thr
20     25     30
Asn Val Ile Asn Ala Asn Leu Ile Gly His Phe Asn Tyr Lys Asp Arg
35     40     45
Glu Pro Leu Thr Ile Val Phe Val Tyr Met Ile Asp Glu Ser Glu Gln
50     55     60
Asn Lys Leu Ser His Pro Asn Lys Ile Asp Lys Ile Lys Ile Ser Asp
65     70     75     80
Tyr Ile Ile Glu Phe Asp Asp Asn Ala Lys Leu Pro Thr Gly Ser Val
85     90     95
Ile Asp Leu Asn Ile Tyr Thr Cys Lys His Asn Asn Pro Val Leu Ile
100    105    110
Glu Phe Tyr Val Ser Ile Glu Gly Ser Phe Cys Tyr Tyr Phe Ser His
115    120    125

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<210> 42  
 <211> 1271  
 <212> DNA  
 <213> Babesia microti

<400> 42  
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 ccatgacact aggggtccag tgctggaggc tattgtggcc cgcctgagtc agaggcccga 180  
 acgcgtaagg ctagttagtc tatcggccac gcttccaaac tacgaagacg tggctagatt 240  
 tctcactggt aatctagacc gagggctttt ctactttggc agccacttta ggctgtgcc 300  
 cttggagcag gtgtattatg gcgtgaagga gaagaaggct atcaaacggt tcaacgcaat 360  
 caacgaaatt ctctaccaag aggtgattaa cgatgtttct agctgccaaa ttcttgtttt 420  
 tgtgcattct agaaaggaaa cgtacaggac ggcaaaattt atcaaagaca cggccctttc 480  
 acgggacaac ttgggagcct aaaccctaaa ccctaaaccc taaaccctaa ccctaaaccc 540  
 taaaccctaa accctaaacc ctaaacccta accctaaccc taaccctaac cctaaccctag 600  
 ccttcattga cgtctatccc caatcttaga aaaatcttca aatcgattct agaataactg 660  
 gaagcaatta tcagaaattg tataactgct tattagctta ttagcttatt agttaggatg 720  
 tatgcacatt gatgacaact agatgcagca ccacaatcac taccacgtac caatcatata 780  
 ccaataatgt actaataatg taccaataac tatggtttat aaagatgggtg tcatttaaatt 840  
 caatattagt tccttatatt acactctttt taatgagcgg tgctgtcttt gcaggtgata 900  
 ccgatcgcca agctggtggg cctagtggaa ctggtgggcc tagtgaagct ggtgggccta 960  
 gtgaagctgg tgggcctagt gaagctggtg ggccctagtga agctggtggg cctagtgaag 1020  
 ctggtgggcc tagtgaagct ggtgggccta gtgaagctgg tgggcctagt gaagctggtg 1080  
 ggccctagtgg aactggttgg cctagtgaag ctggtgggcc tagtgaagct ggtgggccta 1140  
 gtgaagctgg tgggcctagt ggaactggtt ggccctagtga agctggttgg cctagtgaag 1200  
 ctggttggcc tagtgaagct ggttggccta gtgaagctgg ttggcctagt gaagctggtt 1260  
 ggccctagtga a 1271

<210> 43  
 <211> 166  
 <212> PRT  
 <213> Babesia microti

<400> 43  
 Glu Lys Thr His Ile Ile Val Thr Thr Pro Glu Lys Phe Asp Val Val  
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 Thr Arg Lys Thr Gly Asn Glu Pro Leu Leu Glu Arg Leu Arg Leu Val  
 20 25 30  
 Ile Ile Asp Glu Ile His Leu Leu His Asp Thr Arg Gly Pro Val Leu  
 35 40 45  
 Glu Ala Ile Val Ala Arg Leu Ser Gln Arg Pro Glu Arg Val Arg Leu  
 50 55 60  
 Val Gly Leu Ser Ala Thr Leu Pro Asn Tyr Glu Asp Val Ala Arg Phe  
 65 70 75 80  
 Leu Thr Val Asn Leu Asp Arg Gly Leu Phe Tyr Phe Gly Ser His Phe  
 85 90 95  
 Arg Pro Val Pro Leu Glu Gln Val Tyr Tyr Gly Val Lys Glu Lys Lys  
 100 105 110  
 Ala Ile Lys Arg Phe Asn Ala Ile Asn Glu Ile Leu Tyr Gln Glu Val  
 115 120 125  
 Ile Asn Asp Val Ser Ser Cys Gln Ile Leu Val Phe Val His Ser Arg  
 130 135 140

Lys Glu Thr Tyr Arg Thr Ala Lys Phe Ile Lys Asp Thr Ala Leu Ser  
 145 150 155 160  
 Arg Asp Asn Leu Gly Ala  
 165

<210> 44  
 <211> 154  
 <212> PRT  
 <213> Babesia microti

<400> 44  
 Leu Trp Phe Ile Lys Met Val Ser Phe Lys Ser Ile Leu Val Pro Tyr  
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 Ile Thr Leu Phe Leu Met Ser Gly Ala Val Phe Ala Gly Asp Thr Asp  
 20 25 30  
 Arg Glu Ala Gly Gly Pro Ser Gly Thr Val Gly Pro Ser Glu Ala Gly  
 35 40 45  
 Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu  
 50 55 60  
 Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro  
 65 70 75 80  
 Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly  
 85 90 95  
 Trp Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu  
 100 105 110  
 Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro Ser Glu Ala Gly Trp Pro  
 115 120 125  
 Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly  
 130 135 140  
 Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu  
 145 150

<210> 45  
 <211> 4223  
 <212> DNA  
 <213> Babesia microti

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4223

<210> 46  
 <211> 294  
 <212> PRT  
 <213> Babesia microti

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 Arg Glu Ala Gly Gly Pro Ser Gly Thr Val Gly Pro Ser Glu Ala Gly  
 35 40 45  
 Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu  
 50 55 60  
 Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro  
 65 70 75 80  
 Ser Glu Ala Gly Gly Pro Ser Gly Thr Val Gly Pro Ser Glu Ala Gly  
 85 90 95  
 Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu  
 100 105 110  
 Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro  
 115 120 125  
 Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly  
 130 135 140  
 Trp Pro Ser Glu Arg Phe Gly Tyr Gln Leu Leu Trp Tyr Ser Arg Arg  
 145 150 155 160  
 Ile Val Ile Phe Asn Glu Ile Tyr Leu Ser His Ile Tyr Glu His Ser  
 165 170 175  
 Val Met Ile Leu Glu Arg Asp Arg Val Asn Asp Gly His Lys Asp Tyr  
 180 185 190  
 Ile Glu Glu Lys Thr Lys Glu Lys Asn Lys Leu Lys Lys Glu Leu Glu  
 195 200 205  
 Lys Cys Phe Pro Glu Gln Tyr Ser Leu Met Lys Lys Glu Glu Leu Ala  
 210 215 220  
 Arg Ile Ile Asp Asn Ala Ser Thr Ile Ser Ser Lys Tyr Lys Leu Leu  
 225 230 235 240  
 Val Asp Glu Ile Ser Asn Lys Ala Tyr Gly Thr Leu Glu Gly Pro Ala  
 245 250 255  
 Ala Asp Asp Phe Asp His Phe Arg Asn Ile Trp Lys Ser Ile Val Pro  
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 Lys Asn Asn Phe Leu Tyr Cys Asp Leu Leu Leu Lys His Leu Ile Arg  
 275 280 285  
 Leu Thr Pro Arg Lys Ser  
 290

<210> 47  
 <211> 30  
 <212> PRT  
 <213> Artificial Sequence

<220>  
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## BMNI-3 (SEQ ID NO:3)

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 20 25 30

<210> 48  
 <211> 30  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Synthetic peptide of repeat region of antigen  
 BMNI-3 (SEQ ID NO:3)

<400> 48  
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 1 5 10 15  
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 20 25 30

<210> 49  
 <211> 367  
 <212> PRT  
 <213> Babesia microti

<400> 49  
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 Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Val Gly Pro Ser Glu Ala  
 35 40 45  
 Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro Ser  
 50 55 60  
 Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly  
 65 70 75 80  
 Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly Ser Glu Ala Gly Gly  
 85 90 95  
 Trp Pro Ser Gly Thr Gly Trp Pro Ser Glu Ala Gly Trp Ser Ser Glu  
 100 105 110  
 Arg Phe Gly Tyr Gln Leu Leu Pro Tyr Ser Arg Arg Ile Val Ile Phe  
 115 120 125  
 Asn Glu Val Cys Leu Ser Tyr Ile Tyr Lys His Ser Val Met Ile Leu  
 130 135 140  
 Glu Arg Asp Arg Val Asn Asp Gly His Lys Asp Tyr Ile Glu Glu Lys  
 145 150 155 160  
 Thr Lys Glu Lys Asn Lys Leu Lys Lys Glu Leu Glu Lys Cys Phe Pro  
 165 170 175  
 Glu Gln Tyr Ser Leu Met Lys Lys Glu Glu Leu Ala Arg Ile Phe Asp  
 180 185 190  
 Asn Ala Ser Thr Ile Ser Ser Lys Tyr Lys Leu Leu Val Asp Glu Ile

195	200	205
Ser Asn Lys Ala Tyr Gly Thr Leu Glu Gly Pro Ala Ala Asp Asn Phe		
210	215	220
Asp His Phe Arg Asn Ile Trp Lys Ser Ile Val Leu Lys Asp Met Phe		
225	230	235
Ile Tyr Cys Asp Leu Leu Gln His Leu Ile Tyr Lys Phe Tyr Tyr		
245	250	255
Asp Asn Thr Val Asn Asp Ile Lys Lys Asn Phe Asp Glu Ser Lys Ser		
260	265	270
Lys Ala Leu Val Leu Arg Asp Lys Ile Thr Lys Lys Asp Gly Asp Tyr		
275	280	285
Asn Thr His Phe Glu Asp Met Ile Lys Glu Leu Asn Ser Ala Ala Glu		
290	295	300
Glu Phe Asn Lys Ile Val Asp Ile Met Ile Ser Asn Ile Gly Asp Tyr		
305	310	315
Asp Glu Tyr Asp Ser Ile Ala Ser Phe Lys Pro Phe Leu Ser Met Ile		
325	330	335
Thr Glu Ile Thr Lys Ile Thr Lys Val Ser Asn Val Ile Ile Pro Gly		
340	345	350
Ile Lys Ala Leu Thr Leu Thr Val Phe Leu Ile Phe Ile Thr Lys		
355	360	365

&lt;210&gt; 50

&lt;211&gt; 1908

&lt;212&gt; DNA

&lt;213&gt; Babesia microti

&lt;400&gt; 50

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&lt;210&gt; 51

&lt;211&gt; 1460

&lt;212&gt; DNA

&lt;213&gt; Babesia microti

&lt;400&gt; 51

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&lt;210&gt; 52

&lt;211&gt; 503

&lt;212&gt; PRT

&lt;213&gt; Babesia microti

&lt;400&gt; 52

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Tyr	Ile	Ser	Lys	Glu	Tyr	Glu	Tyr	Glu	His	Thr	Glu	Leu	Ala	Lys	Glu
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His	Cys	Lys	Lys	Glu	Lys	Cys	Val	Asn	Val	Asp	Asn	Ile	Glu	Asp	Asn
	50					55				60					
Asn	Leu	Lys	Ile	Tyr	Ala	Lys	Gln	Phe	Lys	Ser	Val	Val	Thr	Thr	Pro

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Ala	Asp	Val	Ala	Gly	Val	Ser	Asp	Gly	Phe	Phe	Ile	Arg	Gly	Asn
				85					90				95	
Leu	Gly	Ala	Val	Gly	Ser	Val	Asn	Glu	Gln	Pro	Asn	Thr	Val	Met
			100					105					110	
Ser	Leu	Glu	Gln	Phe	Ile	Lys	Asn	Glu	Leu	Tyr	Ser	Phe	Ser	Glu
		115					120					125		
Ile	Tyr	His	Thr	Ile	Ser	Ser	Gln	Ile	Ser	Asn	Ser	Phe	Leu	Met
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Met	Ser	Asp	Ala	Ile	Val	Lys	His	Asp	Asn	Tyr	Ile	Leu	Lys	Glu
145					150					155				160
Gly	Glu	Gly	Cys	Glu	Gln	Ile	Tyr	Asn	Tyr	Glu	Glu	Phe	Ile	Lys
			165						170					175
Leu	Arg	Gly	Ala	Arg	Ser	Glu	Gly	Asn	Asn	Met	Phe	Gln	Glu	Ala
			180					185					190	
Ile	Arg	Phe	Arg	Asn	Ala	Ser	Ser	Glu	Glu	Met	Val	Asn	Ala	Ser
	195						200					205		
Tyr	Leu	Ser	Ala	Ala	Leu	Phe	Arg	Tyr	Lys	Glu	Phe	Asp	Asp	Glu
210						215					220			
Phe	Lys	Lys	Ala	Asn	Asp	Asn	Phe	Gly	Arg	Asp	Asp	Gly	Tyr	Phe
225				230						235				240
Asp	Tyr	Ile	Asn	Thr	Lys	Lys	Glu	Leu	Val	Ile	Leu	Ala	Ser	Val
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Asp	Gly	Leu	Asp	Leu	Ile	Met	Glu	Arg	Leu	Ile	Glu	Asn	Phe	Ser
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Val	Asn	Asn	Thr	Asp	Asp	Ile	Lys	Lys	Ala	Phe	Asp	Glu	Cys	Lys
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Asn	Ala	Ile	Ile	Leu	Lys	Lys	Lys	Ile	Leu	Asp	Asn	Asp	Glu	Tyr
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Lys	Phe	Glu	Ala	Leu	Asn	Asp	Leu	Ile	Ile	Ser	Asp	Cys	Glu	Lys
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Gly	Ile	Lys	Ile	Asn	Arg	Asp	Val	Ile	Ser	Ser	Tyr	Lys	Leu	Leu
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Glu	Ala	Gly	Gly	Thr	Ser	Gly	Thr	Thr	Thr	Ser	Ser	Gly	Ala	Ala
			420					425					430	
Gly	Lys	Ala	Gly	Thr	Gly	Thr	Ala	Gly	Thr	Thr	Thr	Ser	Ser	Glu
	435						440					445		
Ala	Gly	Ser	Asp	Lys	Ala	Gly	Thr	Gly	Thr	Ser	Gly	Thr	Thr	Ser
	450					455					460			
Ser	Gly	Thr	Gly	Ala	Gly	Gly	Ala	Gly	Ser	Gly	Gly	Pro	Ser	Gly
465				470						475				480
Ala	Ser	Asn	Ala	Lys	Ile	Pro	Gly	Ile	Met	Thr	Leu	Thr	Leu	Phe
			485						490					495
Leu	Leu	Thr	Phe	Ile	Val	Asn								

500

&lt;210&gt; 53

&lt;211&gt; 275

&lt;212&gt; PRT

&lt;213&gt; Babesia microti

&lt;400&gt; 53

```

Met Val Asn Leu Ser Ile Pro Gly Leu Leu Leu Leu Ser Ala Tyr Ser
 1          5          10          15
Leu Asn Ser Ala Ser Ala Gly Asp Val Tyr Glu Ile Ser Ser Gly Asn
 20          25          30
Pro Pro Asp Ile Glu Pro Thr Ser Thr Ser Leu Glu Thr Asn Val Val
 35          40          45
Thr Asn Tyr Ile Pro Glu Pro Asn Ala Asp Ser Glu Ser Val His Val
 50          55          60
Glu Ile Gln Glu His Asp Asn Ile Asn Pro Gln Asp Ala Cys Asp Ser
 65          70          75          80
Glu Pro Leu Glu Gln Met Asp Ser Asp Thr Arg Val Leu Pro Glu Ser
 85          90          95
Leu Asp Glu Gly Val Pro His Gln Phe Ser Arg Leu Gly His His Ser
 100         105         110
Asp Met Ala Ser Asp Ile Asn Asp Glu Glu Pro Ser Phe Lys Ile Gly
 115         120         125
Glu Asn Asp Ile Ile Gln Pro Arg Trp Glu Asp Thr Ala Pro Tyr His
 130         135         140
Ser Ile Asp Asp Glu Glu Leu Asp Asn Leu Met Arg Leu Thr Ala Gln
 145         150         155         160
Glu Thr Ser Asp Asp His Glu Glu Gly Asn Gly Lys Leu Asn Thr Asn
 165         170         175
Lys Ser Glu Lys Thr Glu Arg Lys Ser His Asp Thr Gln Thr Pro Gln
 180         185         190
Glu Ile Tyr Glu Glu Leu Asp Asn Leu Leu Arg Leu Thr Ala Gln Glu
 195         200         205
Ile Tyr Glu Glu Arg Lys Glu Gly His Gly Lys Pro Asn Thr Asn Lys
 210         215         220
Ser Glu Lys Ala Glu Arg Lys Ser His Asp Thr Gln Thr Thr Gln Glu
 225         230         235         240
Ile Cys Glu Glu Cys Glu Glu Gly His Asp Lys Ile Asn Lys Asn Lys
 245         250         255
Ser Gly Asn Ala Gly Ile Lys Ser Tyr Asp Thr Gln Thr Pro Gln Glu
 260         265         270
Thr Ser Asp
 275

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&lt;210&gt; 54

&lt;211&gt; 22

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; PCR Primer

&lt;400&gt; 54

tttcaggtg ataccgatcg cg

22

<210> 55  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> PCR Primer

<400> 55  
 tggatttcta gaagaatagt tata

24

<210> 56  
 <211> 306  
 <212> DNA  
 <213> Babesia microti

<400> 56  
 ttgcaggtga taccgatcgc gaagctggtg ggcctagtgg aactggtggg cccagtgaag 60  
 ctggtgggcc tagtgaagct ggtgggccta gtggaactgt tgggccagc gaagctggtg 120  
 ggcctagtga agctggtggg cctagtggaa ctggttggcc tagtgaagct ggtgggccta 180  
 gtggaactgt tgggccagc gaagctggtg ggcctagtga agctggtggg cctagtggaa 240  
 ctggttggcc tagtgaagc ggttggccta gtgaagtggg ttggccatt gaaccatttg 300  
 gatatc 306

<210> 57  
 <211> 318  
 <212> DNA  
 <213> Babesia microti

<400> 57  
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 ctggtgggcc tagtgaagct ggtgggccta gtggaactgt tgggccagc gaagctggtg 120  
 ggcctagtga agctggtggg cctagtggaa ctggttggcc tagtgaagct ggtgggccta 180  
 gtggaactgt tgggccagc gaagctggtg ggcctagtga agctggtggg cctagtggaa 240  
 ctggttggcc tagtgaagc ggttggccta gtgaagtggg ttggcctaata gaaccatttg 300  
 gatatacct tctttggt 318

<210> 58  
 <211> 358  
 <212> DNA  
 <213> Babesia microti

<400> 58  
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 ggcctagtga agctggtggg cctagtgaag ctggtgggcc tagtgaagct ggtgggccta 180  
 gtgaagctgg tgggcctagt gaagctggtg ggcctagtga agctggttgg cctagtgaag 240  
 ctggttggcc tagtgaagc ggtgggccta gtggaactgg ttggcctagt gaagctggtt 300  
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<210> 59  
 <211> 409



&lt;212&gt; DNA

&lt;213&gt; Babesia microti

&lt;400&gt; 59

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tggtgggcct	agtgaagctg	gtgggcctag	tgaagctggt	gggcctagt	aagctggtgg	120
gcctagtga	gctggtgggc	ctagtgaagc	tggtgggcct	agtgaagctg	gtgggcctag	180
tgaagctggt	gggcctagt	aagctggtgg	gcctagtga	gctggtgggc	ctagtgaagc	240
tggttggcct	agtgaagctg	gtgggcctag	tggaactggt	tggcctagt	aagctggttg	300
gcctagtga	gctggttggc	ctagtgaagc	tggttggcct	agtgaagctg	gttggcctag	360
tgaacgattt	ggatatcagc	ttctttggta	ttctagaaga	atagttata		409

&lt;210&gt; 60

&lt;211&gt; 351

&lt;212&gt; DNA

&lt;213&gt; Babesia microti

&lt;400&gt; 60

gtgaagctgg	tgggcctagt	ggaactggtg	ggcctagtga	agctggtggg	cctagtgaag	60
ctggtgggcc	tagtgaagct	ggtgggccta	gtgaagctgg	tgggcctagt	gaagctggtg	120
ggcctagtga	agctggtggg	cctagtgaag	ctggtgggcc	tagtgaagct	ggtgggccta	180
gtgaagctgg	tgggcctagt	gaagctggtt	ggcctagtga	agctggttgg	cctagtgaag	240
ctggtgggcc	tagtgaagct	ggttggccta	gtgaagctgg	ttggcctagt	gaagctggtt	300
ggcctagtga	agctggttgg	cctagtgaag	ctggttggcc	tagtgaacga	t	351

&lt;210&gt; 61

&lt;211&gt; 410

&lt;212&gt; DNA

&lt;213&gt; Babesia microti

&lt;400&gt; 61

aggtgatacc	gatcgcggaag	ctggtgggcc	tagtgaagct	gttgggccta	gtgaagctgg	60
tgggcctagt	gaagctggtg	ggcctagtga	agctggtggg	cctagtgaag	ctggtgggcc	120
tagtgaagct	ggtgggccta	gtgaagctgg	tgggcctagt	gaagctggtg	ggcctagtga	180
agctggtggg	cctagtgaag	ctggtgggcc	tagtgaagct	ggtgggccta	gtgaagctgg	240
ttggcctagt	gaagctggtt	ggcctagtga	agctggtggg	cctagtggaa	ctggttggcc	300
tagtgaagct	ggttggccta	gtgaagctgg	ttggcctagt	gaagctggtt	ggcctagtga	360
agctggttgg	cctagtgaac	gatttggata	tcagcttctt	tggtattcta		410

&lt;210&gt; 62

&lt;211&gt; 416

&lt;212&gt; DNA

&lt;213&gt; Babesia microti

&lt;400&gt; 62

ttgcaggtga	taccgatcgc	gaagctggtg	ggcctagtgg	aactggtggg	cctagtgaag	60
ctggtgggcc	tagtgaagct	ggtgggccta	gtgaagctgg	tgggcctagt	gaagctggtg	120
ggcctagtga	agctggtggg	cctagtgaag	ctggtgggcc	tagtgaagct	ggtgggccta	180
gtgaagctgg	tgggcctagt	gaagctggtg	ggcctagtga	agctggtggg	cctagtgaag	240
ctggtgggcc	tagtgaagct	ggttggccta	gtgaagctgg	ttggcctagt	gaagctggtg	300
ggcctagtgg	aactggttgg	cctagtgaag	ctggttggcc	tagtgaagct	ggttggccta	360
gtgaagctgg	ttggcctagt	gaagctggtt	ggcctagtga	acgatttggg	tatcag	416

&lt;210&gt; 63

<211> 356  
 <212> DNA  
 <213> Babesia microti

<400> 63  
 ttgcaggtga taccgatcgc gaagctggtg ggcctagtgg aactggtggg cctagtgaag 60  
 ctggtgggcc tagtgaagct ggtgggccta gtgaagctgg tgggcctagt gaagctggtg 120  
 ggcctagtga agctggtggg cctagtgaag ctggtgggcc tagtgaagct ggtgggccta 180  
 gtgaagctgg tgggcctagt ggaactggtt ggcctagtga agctggttgg cctagtgaag 240  
 ctggttggcc tagtgaagct ggttggccta gtgaagctgg ttggcctagt gaagctggtt 300  
 ggcctagtga acgatttggg tatcagcttc tttggtattc tagaagaata gttata 356

<210> 64  
 <211> 285  
 <212> DNA  
 <213> Babesia microti

<400> 64  
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 ggcctagtga agctggtggg cctagtgaag ctggtgggcc tagtgaagct ggtgggccta 180  
 gtggaactgg ttggcctagt gaagctggtt ggcctagtga agctggttgg cctagtgaag 240  
 ctggttggcc tagtgaagct ggttggccta gtgaagctgg ttggc 285

<210> 65  
 <211> 342  
 <212> DNA  
 <213> Babesia microti

<400> 65  
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 ctggtgggcc tagtgaagct ggtgggccta gtgaagctgg tgggcctagt gaagctggtg 120  
 ggcctagtga agctggtggg cctagtgaag ctggtgggcc tagtgaagct ggtgggccta 180  
 gtgaagctgg tgggcctagt ggaactggtt ggcctagtga agctggttgg cctagtgaag 240  
 ctggttggcc tagtgaagct ggttggccta gtgaagctgg ttggcctagt gaagctggtt 300  
 ggcctagtga acgatttggg tatcagcttc tttggtattc ta 342

<210> 66  
 <211> 363  
 <212> DNA  
 <213> Babesia microti

<400> 66  
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 ggcctagtga agctggtggg cctagtgaag ctggtgggcc tagtgaagct ggtgggccta 180  
 gtgaagctgg tgggcctagt gaagctggtg ggcctagtgg aactggttgg cctagtgaag 240  
 ctggttggcc tagtgaagct ggttggccta gtgaagctgg ttggcctagt gaagctggtt 300  
 ggcctagtga agctggttgg cctagtgaac gatttggata tcagcttctt tggatttcta 360  
 gaa 363

<210> 67  
 <211> 363  
 <212> DNA

<213> Babesia microti

<400> 67

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ggcctagtga	agctggtggg	cctagtgaag	ctggtgggcc	tagtgaagct	ggtgggccta	180
gtgaagctgg	tgggcctagt	gaagctggtg	ggcctagtgg	aactggttgg	cctagtgaag	240
ctggttggcc	tagtgaagct	ggttggccta	gtgaagctgg	ttggcctagt	gaagctggtt	300
ggcctagtga	agctggttgg	cctagtgaac	gatttggata	tcagcttctt	tggtattcta	360
gaa						363

<210> 68

<211> 101

<212> PRT

<213> Babesia microti

<400> 68

Ala	Gly	Asp	Thr	Asp	Arg	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr	Val	Gly
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Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr
			20					25					30		
Val	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser
		35					40					45			
Gly	Thr	Gly	Trp	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr	Val	Gly
	50					55				60					
Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr
65				70				75						80	
Gly	Trp	Pro	Ser	Gly	Thr	Gly	Trp	Pro	Ser	Glu	Val	Gly	Trp	Pro	Ile
				85				90						95	
Glu	Pro	Phe	Gly	Tyr											
			100												

<210> 69

<211> 105

<212> PRT

<213> Babesia microti

<400> 69

Ala	Gly	Asp	Thr	Asp	Arg	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr	Val	Gly
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Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr
			20					25					30		
Val	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser
		35					40					45			
Gly	Thr	Gly	Trp	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr	Val	Gly
	50					55				60					
Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Glu	Ala	Gly	Gly	Pro	Ser	Gly	Thr
65				70				75						80	
Gly	Trp	Pro	Ser	Gly	Thr	Gly	Trp	Pro	Ser	Glu	Val	Gly	Trp	Pro	Asn
				85				90						95	
Glu	Pro	Phe	Gly	Tyr	His	Leu	Leu	Trp							
			100					105							

<210> 70

<211> 118  
 <212> PRT  
 <213> Babesia microti

<400> 70  
 Ala Gly Asp Thr Asp Arg Glu Ala Gly Gly Pro Ser Gly Thr Val Gly  
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 20 25 30  
 Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser  
 35 40 45  
 Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly  
 50 55 60  
 Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala  
 65 70 75 80  
 Gly Trp Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro Ser  
 85 90 95  
 Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp  
 100 105 110  
 Pro Ser Glu Ala Gly Trp  
 115

<210> 71  
 <211> 136  
 <212> PRT  
 <213> Babesia microti

<400> 71  
 Ala Gly Asp Thr Asp Arg Glu Ala Gly Gly Pro Ser Gly Thr Val Gly  
 1 5 10 15  
 Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala  
 20 25 30  
 Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser  
 35 40 45  
 Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly  
 50 55 60  
 Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala  
 65 70 75 80  
 Gly Trp Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro Ser  
 85 90 95  
 Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp  
 100 105 110  
 Pro Ser Glu Ala Gly Trp Pro Ser Glu Arg Phe Gly Tyr Gln Leu Leu  
 115 120 125  
 Trp Tyr Ser Arg Arg Ile Val Ile  
 130 135

<210> 72  
 <211> 116  
 <212> PRT  
 <213> Babesia microti

<400> 72  
 Glu Ala Gly Gly Pro Ser Gly Thr Val Gly Pro Ser Glu Ala Gly Gly

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 Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala  
                          20                      25                      30  
 Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser  
                          35                      40                      45  
 Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly  
                          50                      55                      60  
 Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala  
 65                      70                      75                      80  
 Gly Gly Pro Ser Gly Thr Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser  
                          85                      90                      95  
 Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp  
                          100                      105                      110  
 Pro Ser Glu Arg  
                          115

<210> 73  
 <211> 136  
 <212> PRT  
 <213> Babesia microti

<400> 73  
 Gly Asp Thr Asp Arg Glu Ala Gly Gly Pro Ser Gly Thr Val Gly Pro  
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 Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly  
                          20                      25                      30  
 Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu  
                          35                      40                      45  
 Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro  
                          50                      55                      60  
 Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly  
 65                      70                      75                      80  
 Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Gly Pro Ser Gly  
                          85                      90                      95  
 Thr Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro  
                          100                      105                      110  
 Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Arg Phe  
                          115                      120                      125  
 Gly Tyr Gln Leu Leu Trp Tyr Ser  
                          130                      135

<210> 74  
 <211> 138  
 <212> PRT  
 <213> Babesia microti

<400> 74  
 Ala Gly Asp Thr Asp Arg Glu Ala Gly Gly Pro Ser Gly Thr Val Gly  
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 Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala  
                          20                      25                      30  
 Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser  
                          35                      40                      45  
 Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly

50                      55                      60  
 Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala  
 65                      70                      75                      80  
 Gly Gly Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser  
                     85                      90                      95  
 Glu Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro Ser Glu Ala Gly Trp  
                     100                      105                      110  
 Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala  
                     115                      120                      125  
 Gly Trp Pro Ser Glu Arg Phe Gly Tyr Gln  
 130                      135

<210> 75  
 <211> 118  
 <212> PRT  
 <213> Babesia microti

<400> 75  
 Ala Gly Asp Thr Asp Arg Glu Ala Gly Gly Pro Ser Gly Thr Val Gly  
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 Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala  
                     20                      25                      30  
 Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser  
                     35                      40                      45  
 Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly  
                     50                      55                      60  
 Pro Ser Gly Thr Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala  
 65                      70                      75                      80  
 Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser  
                     85                      90                      95  
 Glu Ala Gly Trp Pro Ser Glu Arg Phe Gly Tyr Gln Leu Leu Trp Tyr  
                     100                      105                      110  
 Ser Arg Arg Ile Val Ile  
                     115

<210> 76  
 <211> 94  
 <212> PRT  
 <213> Babesia microti

<400> 76  
 Ala Gly Asp Thr Asp Arg Glu Ala Gly Gly Pro Ser Gly Thr Val Gly  
 1                      5                      10                      15  
 Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala  
                     20                      25                      30  
 Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser  
                     35                      40                      45  
 Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly Trp  
                     50                      55                      60  
 Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala  
 65                      70                      75                      80  
 Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp  
                     85                      90

<210> 77  
 <211> 113  
 <212> PRT  
 <213> Babesia microti

<400> 77  
 Ala Gly Asp Thr Asp Arg Glu Ala Gly Gly Pro Ser Gly Thr Val Gly  
 1 5 10 15  
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 20 25 30  
 Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser  
 35 40 45  
 Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly  
 50 55 60  
 Pro Ser Gly Thr Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala  
 65 70 75 80  
 Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser  
 85 90 95  
 Glu Ala Gly Trp Pro Ser Glu Arg Phe Gly Tyr Gln Leu Leu Trp Tyr  
 100 105 110  
 Ser

<210> 78  
 <211> 120  
 <212> PRT  
 <213> Babesia microti

<400> 78  
 Ala Gly Asp Thr Asp Arg Glu Ala Gly Gly Pro Ser Gly Thr Val Gly  
 1 5 10 15  
 Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala  
 20 25 30  
 Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser  
 35 40 45  
 Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly  
 50 55 60  
 Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro Ser Glu Ala  
 65 70 75 80  
 Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser  
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 Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Arg Phe Gly  
 100 105 110  
 Tyr Gln Leu Leu Trp Tyr Ser Arg  
 115 120

<210> 79  
 <211> 120  
 <212> PRT  
 <213> Babesia microti

<400> 79  
 Ala Gly Asp Thr Asp Arg Glu Ala Gly Gly Pro Ser Gly Thr Val Gly  
 1 5 10 15

Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala  
                   20                  25                  30  
 Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser  
                   35                  40                  45  
 Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly Pro Ser Glu Ala Gly Gly  
                   50                  55                  60  
 Pro Ser Glu Ala Gly Gly Pro Ser Gly Thr Gly Trp Pro Ser Glu Ala  
                   65                  70                  75                  80  
 Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser  
                   85                  90                  95  
 Glu Ala Gly Trp Pro Ser Glu Ala Gly Trp Pro Ser Glu Arg Phe Gly  
                   100                  105                  110  
 Tyr Gln Leu Leu Trp Tyr Ser Arg  
                   115                  120

<210> 80  
 <211> 29  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> PCR Primer

<400> 80  
 cagagcagta ctgatgatat taagaaggc

29

<210> 81  
 <211> 43  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> PCR Primer

<400> 81  
 caatatgaat tcagtgaata ttacaataa atgttaataa tgc

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<210> 82  
 <211> 32  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> PCR Primer

<400> 82  
 cataacaata ttccagaacc caatgcggat tc

32

<210> 83  
 <211> 32  
 <212> DNA  
 <213> Artificial Sequence

<220>

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84  
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<210> 84

<211> 2001

<212> DNA

<213> Babesia

<400> 84

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<211> 666

<212> PRT

<213> Babesia

<400> 85

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 Asp Cys Glu Lys Lys Gly Ile Lys Ile Asn Arg Asp Val Ile Ser Ser  
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 Tyr Lys Leu Leu Leu Ser Thr Ile Thr Tyr Ile Val Gly Ala Gly Val  
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 195 200 205  
 Gly Pro Ser Gly His Ala Ser Asn Ala Lys Ile Pro Gly Ile Met Thr  
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 Leu Thr Leu Phe Ala Leu Leu Thr Phe Ile Val Asn Ile Pro Glu Pro  
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 Glu Gly Asn Gly Lys Leu Asn Thr Asn Lys Ser Glu Lys Thr Glu Arg  
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 Lys Ser His Asp Thr Gln Thr Pro Gln Glu Ile Tyr Glu Glu Leu Asp  
 370 375 380  
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 Ser His Asp Thr Gln Thr Thr Gln Glu Ile Cys Glu Glu Cys Glu Glu  
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 Gly His Asp Lys Ile Asn Lys Asn Lys Ser Gly Asn Ala Gly Ile Lys  
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 Ser Tyr Asp Thr Gln Thr Thr Gln Glu Ile Cys Glu Glu Cys Glu Glu  
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 Gly His Asp Lys Ile Asn Thr Asn Lys Ser Glu Lys Ala Glu Arg Lys  
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 Ser His Asp Thr Gln Thr Thr Gln Glu Ile Cys Glu Glu Cys Glu Glu  
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 Ser Tyr Asp Thr Gln Thr Pro Gln Glu Thr Ser Asp Ala His Glu Glu  
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 Ser His Asn Thr Gln Thr Pro Leu Lys Lys Lys Asp Phe Cys Lys Glu  
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Gly Cys His Gly Cys Asn Asn Lys Pro Glu Asp Asn Glu Arg Asp Pro  
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Ser Ser Pro Asp Asp Asp Gly Gly Cys Glu Cys Gly Met Thr Asn His  
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Phe Val Phe Asp Tyr Lys Thr Thr Leu Leu Leu Lys Ser Leu Lys Thr  
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Glu Thr Ser Thr His Tyr Tyr Ile Ala Met Ala Ala Ile Phe Thr Ile  
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<211> 3402

<212> DNA

<213> Babesia

<400> 86

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<211> 1132

<212> PRT

<213> Babesia

<400> 87

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35 40 45

Leu Leu Gln Val Ser Ile Ile Ala Ser Tyr Gly Pro Ser Gly Asp Tyr  
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Ser Ser Phe Val Phe Thr Pro Val Val Thr Ala Asp Thr Asn Val Phe  
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Tyr Lys Leu Glu Thr Asp Phe Lys Leu Asp Val Asp Val Ile Thr Lys  
85 90 95

Thr Ser Leu Glu Leu Pro Thr Ser Val Pro Gly Phe His Tyr Thr Glu  
100 105 110

Thr Ile Tyr Gln Gly Thr Glu Leu Ser Lys Phe Ser Lys Pro Gln Cys

115	120	125
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His Asp Gly Leu Asn Asn Ser Thr Ile Ile Thr Asn Lys Glu Val Asn 145 150 155 160		
Val Asp Gly Thr Asp Leu Val Phe Phe Glu Leu Leu Pro Pro Ser Asp 165 170 175		
Gly Ile Pro Thr Leu Arg Ser Lys Leu Phe Pro Val Leu Lys Ser Ile 180 185 190		
Pro Met Ile Ser Thr Gly Val Asn Glu Leu Leu Leu Glu Val Leu Glu 195 200 205		
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Leu Ile Ser Asp Ile Lys Ser His Ser Leu Lys Ala Gly Val Thr Gly		

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Leu	Pro	Gly	Phe	Phe	Ile	Val	Pro	Gly	Ser	Thr	Asp	Asp	Ile	Lys	Lys				
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Leu	Asp	Asn	Asp	Glu	Asp	Tyr	Lys	Ile	Asn	Phe	Arg	Glu	Met	Val	Asn				
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Glu	Val	Thr	Cys	Ala	Asn	Thr	Lys	Phe	Glu	Ala	Leu	Asn	Asp	Leu	Ile				
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Ser	Ser	Tyr	Lys	Leu	Leu	Leu	Ser	Thr	Ile	Thr	Tyr	Ile	Val	Gly	Ala				
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Gly	Val	Glu	Ala	Val	Thr	Val	Ser	Val	Ser	Ala	Thr	Ser	Asn	Gly	Thr				
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Glu	Ser	Gly	Gly	Ala	Gly	Ser	Gly	Thr	Gly	Thr	Ser	Val	Ser	Ala	Thr				
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Ser	Thr	Leu	Thr	Gly	Asn	Gly	Gly	Thr	Glu	Ser	Gly	Gly	Thr	Ala	Gly				
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Thr	Thr	Thr	Ser	Ser	Gly	Thr	Glu	Ala	Gly	Gly	Thr	Ser	Gly	Thr	Thr				
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Thr	Ser	Gly	Thr	Thr	Thr	Ser	Ser	Gly	Thr	Gly	Ala	Gly	Gly	Ala	Gly				
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690	695	700
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Met Asp Ser Asp Thr Arg Val Leu Pro Glu Ser Leu Asp Glu Gly Val 740 745 750		
Pro His Gln Phe Ser Arg Leu Gly His His Ser Asp Met Ala Ser Asp 755 760 765		
Ile Asn Asp Glu Glu Pro Ser Phe Lys Ile Gly Glu Asn Asp Ile Ile 770 775 780		
Gln Pro Pro Trp Glu Asp Thr Ala Pro Tyr His Ser Ile Asp Asp Glu 785 790 795 800		
Glu Leu Asp Asn Leu Met Arg Leu Thr Ala Gln Glu Thr Ser Asp Asp 805 810 815		
His Glu Glu Gly Asn Gly Lys Leu Asn Thr Asn Lys Ser Glu Lys Thr 820 825 830		
Glu Arg Lys Ser His Asp Thr Gln Thr Pro Gln Glu Ile Tyr Glu Glu 835 840 845		
Leu Asp Asn Leu Leu Arg Leu Thr Ala Gln Glu Ile Tyr Glu Glu Arg 850 855 860		
Lys Glu Gly His Gly Lys Pro Asn Thr Asn Lys Ser Glu Lys Ala Glu 865 870 875 880		
Arg Lys Ser His Asp Thr Gln Thr Thr Gln Glu Ile Cys Glu Glu Cys 885 890 895		
Glu Glu Gly His Asp Lys Ile Asn Lys Asn Lys Ser Gly Asn Ala Gly 900 905 910		
Ile Lys Ser Tyr Asp Thr Gln Thr Thr Gln Glu Ile Cys Glu Glu Cys 915 920 925		
Glu Glu Gly His Asp Lys Ile Asn Lys Asn Lys Ser Gly Asn Ala Gly 930 935 940		
Ile Lys Ser Tyr Asp Thr Gln Thr Pro Gln Glu Thr Ser Asp Ala His 945 950 955 960		
Glu Glu Gly His Asp Lys Ile Asn Thr Asn Lys Ser Glu Lys Ala Glu 965 970 975		
Arg Lys Ser His Asp Thr Gln Thr Thr Gln Glu Ile Cys Glu Glu Cys		



980	985	990
Glu Glu Gly His Asp Lys Ile Asn Lys Asn Lys Ser Gly Asn Ala Gly 995 1000 1005		
Ile Lys Ser Tyr Asp Thr Gln Thr Pro Gln Glu Thr Ser Asp Ala His 1010 1015 1020		
Glu Glu Glu His Gly Asn Leu Asn Lys Asn Lys Ser Gly Lys Ala Gly 1025 1030 1035 1040		
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36

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<210> 92  
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ctctaggtgt tatgaaaagt gtatataaca ttaaaattga gggtgagaag taatgaggat 180  
aatgtaatt acccataaga acttcgggtcc agcaactgaa aagtagtgga aacaactaaa 240  
tgaacaaact ctgagaaaag gagaccatgt ttaataggaa ttcattccta cagaactatg 300  
aaacactggt acttggtaca taagacaaac tacagaaagt aggatacgaa tgtcagagcc 360

```

ttcttttttat tttttttctg agagatttga tcttgctcag agatgccaat tgagttctat 420
actccaataa ttgagcactt gtaccttgac ctttaatatc ctccggaaaa attatagata 480
tgagggagta taggtatgag aaaattgtct catttgatc ctgacctcom cttgtatcct 540
gatctccact tgttgntgac ccttcacttg tttgntgacc ttcccttggt tggtgacctt 600
ccttg 605

```

```

<210> 93
<211> 631
<212> DNA
<213> Babesia microti

```

```

<400> 93
gttcctactt tgtcatcatt ggtcaagttg ttcagtgaag ttatgctgag agtgaaggat 60
gcgtcttcca cagaggctac catacgcatg ttcctccgtt tcaacgcatt tataaaattt 120
ttgaatgagg agaaatccag aggtgacaaa agtgcgttga atgatgaggg attgatgagg 180
tttatatcga tgaccagtgg atttatcgat gaccttgaat tagttttaga tgagttatcc 240
aagcacagtt tgcttataaa taacgaaggt gccaaagagca tgctatcctc tctcatacta 300
agcttccgtt atattaatca cataagaaat ttgatcaatg gtatttacct tggattgaat 360
aaccatcat cgtccattgg tgagacagca caagaaacaa ctgaaccctc cactcccact 420
cccactcca gcacacagac aatcctgaaa ccgaagggat ccgagataag gggctatata 480
ataaaagttg atcaaacagc taatctcatc acattcatag atgcattgat caaggagttg 540
aacgttcata ttaaacagac aacaacttcg tctggtkgtt ggcactaaag aaactaatgg 600
cactaccagt ggttctyctg aaagcaatcc c 631

```

```

<210> 94
<211> 632
<212> DNA
<213> Babesia microti

```

```

<220>
<221> misc_feature
<222> (1)...(632)
<223> n=A,T,C or G

```

```

<400> 94
ataaataagt aaatacttac tgaaaacact tcaaaaacat gcaaaaacac agcataggac 60
ttaacaatta caaagtgaaa ctgtacaatt ccatccttct aatgccattt acaagttgag 120
aathtagga atataaatca taagcagata gatcaaaaac agaatatctg gaataatgaa 180
acataaaatg gaaatctaaa ctagaagtaa gttttataaa gccacaggca ggtactgaac 240
ctgagttcct ggttaccgac tgttagtctt cccttaatgg ggtagacttg gctggcccca 300
aagccactgg tatcatcatt ctgtctttgc atgtcctgtg caagggctca aggtgtgctg 360
ctgtgtccag tttgctacaa gactactgag gctgagccca tatcccatg gttatatggt 420
gaacaatttc cacatggagc attctcccca gttcatcttc cagaattcaa tattgatgta 480
tcagttctta attcattgat gtaagtcaat ctcccttaaa ttaaaaatta atagaaagca 540
atctctctaa cgggcaactt tctgcttgcg tgtaatatgt atgtgaaatc tagattctgc 600
ngaggagacc aaaccagtnt atttttgtgc ct 632

```

```

<210> 95
<211> 426
<212> DNA
<213> Babesia microti

```

<220>  
 <221> misc\_feature  
 <222> (1)...(426)  
 <223> n=A,T,C or G

<400> 95  
 attttgtact gttcaaatgt gtaatatatt tgtgaaagaa gaaaataatt taagtcaaga 60  
 ggatgatgaa agggcagaag taatacttga gataagcact tcacatctta caattaaaac 120  
 tcttctgtgt ctacctgcaa attcatgaca gatgaaatta acttgntttc tattcgggtt 180  
 ctctctttat ttctgccagt attataattt caggaaggaa catgcatcat aaattacatg 240  
 taactttcat gttgcagtga tgctgggttc tatttttgat ctcatgtgac agcagtaaag 300  
 tcatacnaaa aataataaat acctctcatg gagcttgcca tttcctctgc atcttttttg 360  
 gggaagaant ggcccgaaaa gttaaagcgtt aagactcaca aagtcacaaa ctttcagata 420  
 gaaccc 426

<210> 96  
 <211> 472  
 <212> DNA  
 <213> Babesia microti

<220>  
 <221> misc\_feature  
 <222> (1)...(472)  
 <223> n=A,T,C or G

<400> 96  
 aggtnacaca tagaggagtg tgggtcaatta aacactcaag caccctatgt cttgggtttgc 60  
 tctctattgc tgtgataaac accagagcta agcccaactt gaagttgtca catggtctcc 120  
 acacaaatac acacacacac acaccacaca cacacctatt gtatgcacat gcaccccccc 180  
 ccccttncaa aaaaaaagga ncctctactc tttaccagca ataaaaaatg aactaggtga 240  
 aaagaaaacc aaccttgctt catcatttag tcatagaaaa tgatactggg gttggcattt 300  
 actatcatta acctaaaata aatgtgtccc tacctaaggg tataaactgt tatctggcct 360  
 tgtacagatt ttggatcttg aattctttta gnggggtgcc caatagcatt ttaaggncoc 420  
 agaataaata gaccggatga aatgggatgg gctagagtag aatggaggct an 472

<210> 97  
 <211> 867  
 <212> DNA  
 <213> Babesia microti

<220>  
 <221> misc\_feature  
 <222> (1)...(867)  
 <223> n=A,T,C or G

<400> 97  
 ttaatattat gttcaccgaa acatcctgta gtatacaact caaccaattc accattaaat 60  
 gataatttga tcagtgtata ttgtgatgtt atatttattg gtattgttat ctaccaaac 120  
 ttaacttcgc tgatgtaaat tttggaatct ggattattgg tgtacaacat gctcccatca 180  
 cttaatgata tttttaaaaa ttcgttatca tcgggcactag aaatatcaaa tgattttat 240  
 gttatgtcat tgactgtata agtactactt cgatttttgag gaataataaa ttctgggtca 300

```

tccctcaaaa caaatttgct agattgnaaa ccagattgct catagtaaac ggggtgaagta 360
gaactcgaag tcttatcttg aatcctaaca acmatcaaag gatatttagt ggtgtatgaa 420
acggtcctag tgataacaty catggactgt ggaattaatt gattgccaaa tattacacaa 480
ccaattgaaa accctgtagc tggggtaact ttggtaaaga ttccatcagt agaaaaaacg 540
taactagaag aaagaccctc tgggaacttg tcaacaaatc ctatttcgtt tatgttaaga 600
ttcacaatat ttgtgacagc aacatcttgt gtggtctcca gagacggaga aattgttgat 660
gtggcagctg ttgttgatgt ggtagctgtt gttgatgtgg cagttgttgt tgatgtggca 720
gttgtgtgtg atgtggtagc tgttgttgat gtagcagatg ttgttgatgt agcagtacat 780
actgacagta catgtgcatg tgtgtgtaaa taggattctt gttaaagccaa gtatatcctc 840
actgctgatt tgtctgatat tacctcc 867

```

```

<210> 98
<211> 815
<212> DNA
<213> Babesia microti

```

```

<400> 98
tagtcattag attatcatga caccaataag ctttttatct tgaagttggt ttatatatta 60
atacaaccat agcatcataa aagctacatt tgtttttttt atcttaaccc atggatcatc 120
agtctttttc ctttattatt catcattgat tgtccttaaa tgcctaaagc atctgcccct 180
ttaaactact tctttctaaa ttagcatata ctctatatgg tcatacctat tctgtgtaat 240
catcaggttc cctgtgcagg ggaaaggagg aacgctcaag cactgaggaa tcatcccgtc 300
gtgtgataac gttgatggaa gacaagtgat acagttagtt gttcaaacia ataagcatat 360
tttaagggga agaatagtgt cgtactaact aaaatctaata ttgaccataa tacgcacatt 420
agtttggttg tgcctcaattt ttttaatgaa tcaggccccc gatttatatt tgtgaaagtc 480
catgtgggag cgtaaggatg ggatagttta ttacagtag cttctctggg gaaaggaaaag 540
caaagcccca actgtataga gttcattgga gctgtcacct acgcccctgc cttcctgtcc 600
ctttagagtg cctcagtttg ctgtgtggca agagtctctc cctgctcctg ctctcctagc 660
cccctctgcc tgcctcccc agttgatgag agagtccact gttggagaag ttaactctaa 720
tcttacacct ggggagagct actggaaatt aattttccat gtaactggct ttgagttcta 780
gcaggcttta gattttagaa gtttttgtgt gtgtg 815

```

```

<210> 99
<211> 1225
<212> DNA
<213> Babesia microti

```

```

<220>
<221> misc_feature
<222> (1)...(1225)
<223> n=A,T,C or G

```

```

<400> 99
attgtgtaaa gggttaccat ggccatggca atttttgtaa aagaaagcat ttaaattggg 60
gcttggttac agtttaagag ggttgactca tgaccatcat tgtgggaagc atggtagcag 120
gttggcatgg tgctggatca gtaattgaga gctttacact ctgacctaag ggcacagac 180
aaagaaaagc ctggctcctg tgtgggcttg aagcctcaaa atccccctct aatgacacac 240
ttccctcaag tacatactta ttccctaaatc cttctcaaac agtttcaaaa cttgtgcctg 300
agtgttcaaa tatatgaacc tacagggggc attcacattc aaattatcac aggcagataa 360
gttactagtc atggaagttc aaatatatac tttgttatga aaatataaat atgctttaga 420
atctggggaa cccagaaggg tggagatggg gtcaagattc tctgagatgg ggtcaagatt 480
ctctgtgtct ccctgggcct ggctggaatg tccctcctgt cttccaagtc ctctgttcca 540

```

```

ggtgaccatg tccccatccc agtcccctcg atgggtcctca tgccctcctc tcagttcctg 600
gctgctcccc ccccccgcc acatcccat caagggactg gccgggtctc atactgctac 660
ccatgcaggg tgctcatgcc cttgcgcccc ggcaccttta gtgtttcngt cccttcccgg 720
ccccactcag cgccacccca tgtcgcaggg ccgccgtccg cgccacggga ccttgcaagt 780
acaagcttga gccgcttccc ccctggcgyt ggcactgcgg tggttgccgc cttgcgggam 840
tccggcggtc gttccgacgt cacctactcg stgcttgtgc ctgctctgcg ggccgcgacg 900
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cgctggccg cgctcaacgg tgtctcaggc ccagcgccg ccgcggaagc cacctacgcg 1080
caggtcaccg tgtccaccgg acccgagggt gaggccacgc gcccagcgg agtcgctccc 1140
cctccccaac cgcagttccc tctatgcatt ccaagtcatt caggaacca cgtgactaca 1200
ccccatgccc caggtgcggc acgag                                     1225

```

```

<210> 100
<211> 537
<212> DNA
<213> Babesia microti

```

```

<220>
<221> misc_feature
<222> (1)...(537)
<223> n=A,T,C or G

```

```

<400> 100
aaagaaagag aagaaggagg agaagagcaa ggggaatgaa tgagagagga gagaaggga 60
tagaagagag gggagggcag aggaggggaa gcagagggga ggggaaagga aggagaaaga 120
gaacagagac agaggggaagg tcaggtacat cactgtccaa gagatcacat attatccaag 180
cmacggacag agcttttagga agtgtacaga gaggcacctt tcacccagtg tcctataatg 240
accatttctg caaattctct agaacttagt tccattctgc acaacccctc catacctgtc 300
atcatgtgct tcacttacta gcctcaagta agctgttaag tgttccagtg ttatatgcca 360
ttctagtacc ttcatccagt gactgataga agcagagcta aacnccnca gttaaacaat 420
aaactgaatc ctagaacc mgtgaccgag agtgktctca taattcttaa aaagatgcta 480
ttaaatttta tcctgtatca tactacatta tctttttttc ttccttcccc tcccccc 537

```

```

<210> 101
<211> 543
<212> DNA
<213> Babesia microti

```

```

<220>
<221> misc_feature
<222> (1)...(543)
<223> n=A,T,C or G

```

```

<400> 101
acataacact agggacttgg cattgcatat ctgtaaatat aattgaaacc aaaataaaat 60
attggtgagt tccataggtt ggggtgttca cagtgcatt taaaagtga attcttgaga 120
gctggtttgg aggttctatt aggggagtg ggtacttgta taccttgga tgaagaccag 180
tcctcctcta ttccgggaag gycgycctct tcgaccaagc atgcacttca ggatggacac 240
acatggagtg ttgagggagg aaagagatcc ccctaagcca gatagatcaa ctaaataaac 300
cttggaataa aatgggggtga cagatgtarc avcgagaatg ccctcacata ctgaaaatga 360

```

```

aataattamc cmccwttagt ttttccatyt gatacctagg cmctytctaa ttttaattcca 420
mcattctkga aaagtgkstt ttgaaagatt ggtgggcaac ccccctaatt antcccctnc 480
caatggggta aggccaaaaa accagggggg aaattccaaa aattattgnt ttgtaaaggg 540
gaa 543

```

```

<210> 102
<211> 811
<212> DNA
<213> Babesia microti

```

```

<220>
<221> misc_feature
<222> (1)...(811)
<223> n=A,T,C or G

```

```

<400> 102
tggataagga tgaagtcagt tagaccaata ctaattcatt ttattacatt ctttttaaca 60
agtggaaatg tctttgcagg aaatggtgat gttaatcaat attcaagtga ttttggacga 120
gcattaaacg atcttatgat cgcttttaac gaggctaaaa aaatgtatgc aaaattttct 180
gaacagatca cggacactat gattcatacc tgcaaaaaata gtattgatat actagaagca 240
gatgagaaga atggtggtca taaaaattac cttgaaaaga aagaaattga gctcaaaagt 300
aaaattgtgg aatttaacgc cattttttca aacattgatt taaataatan gtacggktaa 360
aaatgaaata attaaactgc ttaatgatat atccactatc tctaccgata ttaagtcaat 420
tgttgatgaa atatactata aggctcttgg tacaattgaa ggtgaaaatg ctgaaaattt 480
tgagtatgaa attaagaaaa agaaagctga actacttaga aacctgctga atgataatat 540
taaaccaatt atggggatat ttaactgaga tatcaatatg ccatccaatt atatcaata 600
aagcgaatth atgatatcaa gaaagcattt gaaaagcacg aattagaagc taatgttttg 660
atatcccaga tattagaaaa tatcagaatt ttggcactaa ttttaatgac attttaaatg 720
aagtgaatgg ngcaattgaa gaatttaata aaactattgg acgtcatgaa taacaccatt 780
ggggaccctt ggtattggta ttgacagcgg g 811

```

```

<210> 103
<211> 2966
<212> DNA
<213> Babesia microti

```

```

<400> 103
ctcgtgccga atgtcattta tgatctaata atattgtatt atctctaata ttatgggtata 60
atagatactg tgaaaataaa ttcaactgga gataaggaaa ccatttgtat agatatttta 120
tacaaattat tatgaaataa tctaaataaa tgacaaaaaa tcgattatac aaatcacatt 180
aatgacaaac aaacttgtat acatatattg attaacatta caaaactaaa ttataatatt 240
tagattgata attgttataa tacttaacaa tattctactt tttaatataa ttttttattc 300
aataatatac tctttcatat tttgtactat tttatataat catatatatt atataattat 360
atataattga taattgaata tatcaataat gatgatatac atgaatatgc atatataccc 420
catataatgt tattatattt agtgcttaca ttattaatta taaatatatt taaataatta 480
aataataatg aaaattaaca tagacaatat aatattaatc aatttgataa tattattgaa 540
tcgtaatgta gtatattgtg tggataaaaa tgatgtttca ttatggaaat caaaacctat 600
aacaactgtc agtaccacta atgatactat tacaaataaa tacactagta ctgtaattaa 660
tgccaatttt gctagctacc gtgaatttga ggatagggaa cctttaacaa taggatttga 720
atacatgatc gataaatcac aacaagataa attatcacat ccaaataaaa ttgataaaat 780
caaaatttct gattatataa ttgaatttga tgacaatgct aaattaccaa ctggtagtgt 840
taatgatata tccatcatta cttgcaagca taataatcca gtattaatta gattctcatg 900

```

```

tttaatagaa ggatctatct gctattatct ctacttattg aataatgata caaataaatg 960
gaataatcac aaattaaaaat atgataaaac atacaatgaa catactgaca ataatgggtat 1020
taattattat aaaatcgatt atagtgaatc tacagaacct actaccgaat ctactacctg 1080
tttttgtttt cgcaaaaaaaa atcataaatc tgagcgtaaa gaattagaaa attataaata 1140
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taaattaaca acaattggta ctgtcaatat tatatatatc tatacttgca agcataataa 1560
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tgaacatact gacatgaatg gtattaatta ttatgaatat gtacttggtg aatgcagttc 1740
ttatacttgt aaaaatgaat atgagcataa agaattagca agaatacatt gtaatgaaga 1800
aaaatgtgta aatgtaaagg tagataacat tgggaataaa aatttggaat tttatctaaa 1860
ataatttaac gaagtgtaat atgtaaaata gtttaatgaa gtataatatt atttaaaata 1920
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ttatataaaa tattaacaac atataacaac caacattaat atatacataa tatctttatt 2220
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aaattattat aaattatatg ttataattac aaaaacgtca tttacttatt ttatttcagt 2340
tatgtttcat agtctaattt agatttggtg aaacgcacat ggctgatgtg ctggtgagca 2400
agcagttcca cgaagcaaac aatatgactg atgcgctggc ggcgctttct gcggcggttg 2460
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tggcttcacg tctgattgaa ccgctgattc gcctgaaacg ttacgatgcc aaacgtcagg 2820
agaaaatgcg cgcggcgctg gaacagttga aagggtctga aaatctctct ggcgatctgt 2880
acgagaagat aactaaagca ctggcttgat aaataaccga atggcggtca tagcgccgcc 2940
attcggggaa tttaccctg ttttct 2966

```

<210> 104

<211> 1137

<212> DNA

<213> Babesia microti

<400> 104

```

gtttttttcc cctgaggttt tgattgttaa tttaatgtca aattaattgg attaagaaat 60
gccagcagag catggtggtg aacacctcta attcccaggc aggtgaatct ttgagttcaa 120
ggccaacctc atgtacaaac ctagtcccca gtatasccat gmytaamcag ggaaaccgkg 180
tctkgggaaa aamcaaaawt aaamcagaag agaaaggggg aaatgcctgg ggattagtga 240
ggttaatgcc agtgggtggt tttattacca gagacaataa gaccgtgaga gctctgggaa 300
ttttgtttgt ttgttttttg cttttccaag acagggtttc ttggtagctt tggagcctgt 360
cctggaactc aggtataga tcaggctggc ctogaactca cagacatcca cctgcctctg 420
cctcccaaatt gctgggatta aagggtgtgt ctaccaccac ccgggctaga aagaacttgt 480
tagttgggat gtaaatctct ggtcatccct caaaacaaat ttgctagatt gtaaacgaga 540
ttgctcatag taaacggttg aagtagaact cgaagtctta tcttgaatcc taacaacaat 600
caaaggatat ttagtggtgt atgaaacggt cctagtgtga acatccatgg actgtggaat 660

```



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taattgattg ccaaataatta cacaaccaat tgaaaaccct gtagctgggg taactttggt 720
aaagattcca tcagtagaaa aaaccgtaac tagaagaaag accctctgga acttgatcaa 780
caaatacctat ttcgtttatg ttaagattca caatatattgt gacagcaaca tcttgtgtgg 840
tctccagaga cggagaaaatt gttgatgtgg cagctgttgt tgatgtggta gctgttggtg 900
atgtggcagt tggtgttgat gtggcagttg ttgttgatgt ggtagctgtt gttgatgtag 960
cagatgttgt tgatgtagca gatgttggtg atgtagcagc tgttggtgat gtagcagctg 1020
ttgttgattg agcggcgggt gctgctgaag taggtattga atttgctata ctacacttg 1080
tggcatcggt acctgcgcct cctctagtgt ttgttgccaa agtcagagtg agcctgt 1137

```

<210> 105

<211> 1010

<212> DNA

<213> Babesia microti

<400> 105

```

taggaatatg gatttgagct ttgcctatgg tatcatccca taggcatgag tcagggtcaa 60
aatcgccaga atattccagg caggtttttag taaccctatc catcaatggc gtgttagggg 120
aaaccgaagg tatattatatt gagttttcat ccttagatat acagttttct aaggcataag 180
gggttttccc gccagtgcctt gtagtattgg ttattgacag tagtttttta gttccacttt 240
cattagtgat agctgcggag gctttttgca tagagctggc tagtatagat gaagattttg 300
agtctttgtt tagggggaag tgaatggtgc aattgaagaa ttaataaaa ctattgacgt 360
catgaataac accattgggg accttgggtat tgttattgac agcgggtatta tttcaagcat 420
aaaatcatat atttccacaa tcgccaagat ttctaaagca ataatccctg gacaaatggc 480
attagttttt actgcattaa tattaattct aaattaaatg aaattcagat gtatatatta 540
ttatatagta caaaatttac acatttatta tatacatgaa cgaacatctt gctcttaaat 600
aaagaaattg agatataaat ggaaataaat taaaagtaac atgagaaaga tgaatataat 660
attaaaaat taaatttaac tgaaataaaa tgaaataaaa gaatgtattt tataataatt 720
tataataaat tagtatacaa tgattctaca ttataacaag cgagaataaa taattattga 780
ttagtcataa tattatgtat atgttaaggt ttattgttat gtgttgctaa tatgttatat 840
aattgtatac catagtgatt gatataatgt agaggataac tttggatatt atttgatgac 900
tgataattat agtatataat tataataatg kttataaaaa tgacattaat ttgaaagttt 960
aaattaaaat atatgtaaaa atatgtattt aaatctgaaa tggctaataa 1010

```

<210> 106

<211> 1162

<212> DNA

<213> Babesia microti

<400> 106

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atgtgaatgc attgatcaag gagttgaacg ctcatattaa acagagagca acatctacaa 60
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gatttaccat tgtaagcact ggggtccatt ttagatacac attggcmcca actgccgctt 540
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aggagcaggc acttacatct tgcgtcagtc atggtaacga attcagcata gtaagcactg 660
caggcaagac aacttacact acacaatcta agttgttgtc acttttcaag ttatctgcgg 720
agacgttaag ggattttaat gaagctagat ttgcacttgg taacatgact gatagtgcta 780
ataaatctaa agctttggag gtctacaaat cgacactaac ttactatgaa atcaatatca 840

```

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gtcgaattgg aaaagatttt tggcatatta aaatcaactc cgaatattac ttttgaatca 900
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atcaacgaga caatgtttga cgatttgtcc aaggcaattt cctcatacct atactccctc 1020
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```

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<210> 107
<211> 984
<212> DNA
<213> Babesia microti

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<400> 107
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cagaatttttg agggaaactgc aacagagggt ttctgagagg ctggatcaat tgggctactc 180
atctgtattg gtttctgggtc ctttttttct gaaagcacia acttttaaag gtaccatattg 240
tatctgcatt agcacaatgg aatgtgcagt gtgcacagggt caactaaagg ttttttcttc 300
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ggcactatga catcaaaatt ttattccagg gagtccttag acccaacaac ctacatcgga 420
catgcacctc cagacatatt tacgtcgcca tggatcacga cccacatgca taacaagcgt 480
cttggtgact ttgaagttcc atttgaagca atttttgatg ataaactcat aagttattat 540
accggtacgg atgtcaacgg caagaataag gttcctgcag agcttaccac ggcaatatgc 600
ggcaaagaag acgtgtgtga gcttaacatt accggtttat tgttgaaaga tattagtgtc 660
aagaaattgg aggagtgtag gaagaagaat gcatctagtg gtactccatc tgggtgtaca 720
ccttctaattg ttccagagga gtgtgtgatt aaaagcaact tacagacgggt tatgaagaag 780
gatgttacta caactttgaa atcggatgat gtcagcaatt acagtgttgt atccattcac 840
ttttacattg ataacgtgtt cagacataat actgcttttg gcagaattaa gattggcaac 900
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```

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<210> 108
<211> 537
<212> DNA
<213> Babesia microti

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<400> 108
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aagtgttggc tctgaagttt ggcaacaaga tcgttgatgt cgaggagaca ggcaggacat 180
ttgttacatt tgatgagaag ttgaattcaa tagaaataat taccttcgaa aatgatggca 240
ctatgacatc aaaattttat tccagggagt ccttagactc aacaacctac attggacatg 300
cctctacgta cacacttccc gaagtgttta ccaggtcatt atgtggtaaa gaggacttat 360
gtacgcttga cattacggat ctattgttga aagagattag tgctaagaaa ttggaggagt 420
gtaggaagaa gaatgcattc agtgggtactc catctggtgg tacaccttct aatgttccag 480
aggagtgtgt aattagaacc aacttacaga tggttatgaa gaagaatgct cgtgccg 537

```

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<210> 109
<211> 2559
<212> DNA
<213> Babesia microti

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<220>  
 <221> misc\_feature  
 <222> (1)...(2559)  
 <223> n=A,T,C or G

<400> 109

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aatatccaaa gttatcctct acattatata aatcactatg gtatacaatt atataacata 240
ttagcaacac ataacaatca accttaacat atacataata ttatgactaa tcaataatta 300
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tctttctcat gttactttta ttttattcca tttatatctc aatttcttta ttttaagagca 480
agatgttcgt tcatgtatat aataaatgtg naaattttgn actatataat aatatataca 540
tctgaatttc atttaattta gaattaatat taatgcagta aaaactagtg ccatttgtcc 600
agggattatt gaattagaaa tcttgccgat tgtggaaata tatgatttta tgcttgaaat 660
aataccgctg tcaataacaa taccaaggtc cccaatgggtg ttattcatga cgtcaatagt 720
tttattaaat tcttcaattg caccattcac ttcatttaaa atgtcattaa aattagtgcc 780
aaaattctga ttattttcta atatcttgga tatcaaaaca ttagcttcta attcgtgctt 840
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agtggatata tcattaagca gtttaattat ttcattttta accgtactat tatttaaatc 1140
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<210> 110

<211> 3141  
 <212> DNA  
 <213> Babesia microti

<220>  
 <221> misc\_feature  
 <222> (1)...(3141)  
 <223> n=A,T,C or G

<400> 110

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aaacactttt acaagtgtct atcattgcta gttacggtcc atctggcgat tacagtagtt 180
ttgtgttcac tccagttgta acagcagaca ccaacgtttt ttacaaatta gagacggatt 240
tcaaacttga tgttgatggt attactaaga catcactaga attgccaca agtggttcctg 300
gctttcacta caccgaaact atttaccaag gcacagaatt gtcaaaattt agcaagcctc 360
agtgcaaaact taacgatcct cctattacaa caggatcggg gttgcaaata atacatgatg 420
gtttgaataa ttcgacaatt ataaccaaca aagaagttaa tgtggatgga acagatttag 480
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acaagatagt caccctcttc tatacggata gtgaaactgt caatcttata aagctgcact 3060
cattggagaa tgtaaagcat ggtgttactt attcaattta cgggtgccttc ccaattgaag 3120
aatcatctcc tgaaagttca t 3141

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<210> 111

<211> 1134

<212> DNA

<213> Babesia microti

<400> 111

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<210> 112

<211> 3011

<212> DNA

<213> Babesia microti

<400> 112

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aataatatac tctttcatat tttgtactat tttatataat catatatatt atataattat 360
atataattga taattgaata tatcaataat gatgatatac atgaatatgc atataatccc 420
catataatgt tattatattt agtgcttaca ttattaatta taaatatatt taaataatta 480
aataataatg aaaattaaca tagacaatat aatattaatc aatttgataa tattattgaa 540
tcgtaatgta gtatattgtg tggataaaaa tgatgtttca ttatggaaat caaaccttat 600
aacaactgtc agtaccacta atgatactat tacaataaaa tacactagta ctgtaattaa 660
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<210> 113

<211> 1161

<212> DNA

<213> Babesia microti

<400> 113

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aaattgtcaa aacgttggaa aagatgaagg ttgagtcaga tactgtatta cctagttgca 240
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taaagaaaat taacgactcc ataatacagac ctatgacttc tcggctgatc aacaaatcct 360
ttccggagtt gtgcaagttg tttataaaaa tgcccgatgt cgactccaac aaatttatgg 420
ctttggatgt ggacataagc aacactcttg taaacaggag agtcagatat tctgatggca 480

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aggagcaggc acttacatct tgcgtcagtc atggtaacga attcagcata gtaagcactg 660
caggcaagac aacttacact acacaatcta agttgttgtc acttttcaag ttatctgcgg 720
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gtggagggtca ggatacaaat gagacaattt tctcatacct atactccctc atatctataa 1140
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<210> 114

<211> 984

<212> DNA

<213> Babesia microti

<400> 114

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<210> 115

<211> 1205

<212> DNA

<213> Babesia microti

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<210> 116

<211> 1919

<212> DNA

<213> Babesia microti

<400> 116

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<210> 117

<211> 4722

<212> DNA

<213> Babesia microti



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<210> 118

<211> 2215

<212> DNA

<213> Babesia microti

<400> 118

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aaatttaact gaaataaaat gaaataaaa agtgattttt gtaataattt ataataaatt 2220
agtatacaat gattctacat tataacaagc gagaataaat aattattgat tagtcataat 2280
attatgtata tgtaagggtt tattgttatg tgttgcta atgttatata attgtatacc 2340
atagtgattg atataatgta gaggataact ttggatatta tttgatgacc gataattata 2400
gtatataaatt ataataatgt ttataaaaaat gacattaatt tgaaagttaa aattaaata 2460
tatgtaaaaa tatgtattta aatctgaaat ggctaataat acgttatttt gtaattaatt 2520
atittgtatt tataataatt aattatatta atttctgaaa ttttgaatta ttttaataa 2580
tattatactt cattaaacta ttttacatat tacacttcgt taaattattt tagataaatt 2640
tccaaatttt tattcccaat gttatctacc tttacattta cacatttttc ttcattacaa 2700
tgtattcttg ctaattcttt atgctcatat tcaattttac aagtataaga actgcattta 2760
ccaagtacat attcataata attaataccc attcatgtca gtatgttcat taaatcttgt 2820
atcatatttt attttatgat tattccattt atttgatca ttattcattg aagtagaagt 2880
aattgtagta agatccttct atagaaacta taaattcaac taatactgga ttattatgct 2940
tgcaagtata gatatatata atattgacag taccaattgt tgtaattta acactcgtgc 3000
cg 3002

```

<210> 120

<211> 1312

<212> PRT

<213> Babesia microti

<400> 120

```

Ser Tyr Ser Ser Ser Tyr Val Phe Ser Thr Asp Gly Ile Phe Thr Lys
                5                      10                      15

```

```

Val Thr Pro Ala Thr Gly Phe Ser Ile Gly Cys Val Ile Phe Gly Asn
                20                      25                      30

```

```

Gln Leu Ile Pro Gln Ser Met Asp Val Ile Thr Arg Thr Val Ser Tyr
                35                      40                      45

```

```

Thr Thr Lys Tyr Pro Leu Ile Val Val Arg Ile Gln Asp Lys Thr Ser
                50                      55                      60

```

```

Ser Ser Thr Ser Thr Val Tyr Tyr Glu Gln Ser Gly Leu Gln Ser Ser
                65                      70                      75                      80

```

```

Lys Phe Val Leu Arg Asp Asp Pro Glu Phe Ile Ile Pro Gln Asn Arg
                85                      90                      95

```

```

Ser Ser Thr Tyr Thr Val Asn Asp Ile Thr Tyr Lys Ser Phe Asp Ile
                100                      105                      110

```

```

Ser Ser Ala Asp Asp Asn Glu Phe Leu Lys Ile Ser Leu Ser Asp Gly
                115                      120                      125

```

```

Ser Met Leu Tyr Thr Asn Asn Pro Asp Ser Lys Ile Tyr Ile Ser Glu
                130                      135                      140

```

Val Lys Val Gly Glu Ile Thr Ile Pro Ile Asn Ile Thr Ser Gln Tyr  
 145 150 155 160  
 Thr Leu Ile Lys Leu Ser Phe Asn Gly Glu Leu Val Glu Leu Tyr Thr  
 165 170 175  
 Thr Gly Cys Phe Gly Glu His Asn Ile Lys Lys Phe Arg Lys Val Gly  
 180 185 190  
 Ser Thr Tyr Asn Asp Ile Ser Asn Ala Phe Asp Ile Val Pro Trp Ile  
 195 200 205  
 Pro Ala His Phe Val Val Thr Gln Lys Val Asp Phe Ser Ile Pro Phe  
 210 215 220  
 Asp Leu Phe Glu Ser Asn Tyr His Ser Ile Leu Leu Pro Ala Gly Val  
 225 230 235 240  
 Asn His Ser Ile His Ile Asn Thr Glu Thr Gly Asn Val Asp Ser Val  
 245 250 255  
 Val Phe Phe Leu Asn Pro Leu Ala Lys His Met Leu Thr Phe Gly Asn  
 260 265 270  
 Ile Arg Phe His Asn Ile Asn Leu Pro Pro Phe Ser Leu Gly Ile Ile  
 275 280 285  
 His Ser Ile Thr Val Glu Lys Ala Ile Asn Ser Glu Asp Phe Asp Gly  
 290 295 300  
 Ile Gln Thr Leu Leu Gln Val Ser Ile Ile Ala Ser Tyr Gly Pro Ser  
 305 310 315 320  
 Gly Asp Tyr Ser Ser Phe Val Phe Thr Pro Val Val Thr Ala Asp Thr  
 325 330 335  
 Asn Val Phe Tyr Lys Leu Glu Thr Asp Phe Lys Leu Asp Val Asp Val  
 340 345 350  
 Ile Thr Lys Thr Ser Leu Glu Leu Pro Thr Ser Val Pro Gly Phe His  
 355 360 365  
 Tyr Thr Glu Thr Ile Tyr Gln Gly Thr Glu Leu Ser Lys Phe Ser Lys  
 370 375 380  
 Pro Gln Cys Lys Leu Asn Asp Pro Pro Ile Thr Thr Gly Ser Gly Leu  
 385 390 395 400  
 Gln Ile Ile His Asp Gly Leu Asn Asn Ser Thr Ile Ile Thr Asn Lys  
 405 410 415  
 Glu Val Asn Val Asp Gly Thr Asp Leu Val Phe Phe Glu Leu Leu Pro  
 420 425 430

Pro Ser Asp Gly Ile Pro Thr Leu Arg Ser Lys Leu Phe Pro Val Leu  
 435 440 445  
 Lys Ser Ile Pro Met Ile Ser Thr Gly Val Asn Glu Leu Leu Leu Glu  
 450 455 460  
 Val Leu Glu Asn Pro Ser Phe Pro Ser Ala Ile Ser Asn Tyr Thr Gly  
 465 470 475 480  
 Leu Thr Gly Arg Leu Asn Lys Leu Leu Thr Val Leu Asp Gly Ile Val  
 485 490 495  
 Asp Ser Ala Ile Ser Val Lys Thr Thr Glu Thr Val Pro Asp Asp Ala  
 500 505 510  
 Glu Thr Ser Ile Ser Ser Leu Lys Ser Leu Ile Lys Ala Ile Arg Asp  
 515 520 525  
 Asn Ile Thr Thr Thr Arg Asn Glu Val Thr Lys Asp Asp Val Tyr Ala  
 530 535 540  
 Leu Lys Lys Ala Leu Thr Cys Leu Thr Thr His Leu Ile Tyr His Ser  
 545 550 555 560  
 Arg Val Asp Gly Ile Ser Phe Asp Met Leu Gly Thr Gln Lys Asn Lys  
 565 570 575  
 Ser Ser Pro Leu Gly Lys Ile Gly Thr Ser Met Asp Asp Ile Ile Ala  
 580 585 590  
 Met Phe Ser Asn Pro Asn Met Tyr Leu Val Lys Val Ala Tyr Leu Gln  
 595 600 605  
 Ala Ile Glu His Ile Phe Leu Ile Ser Thr Lys Tyr Asn Asp Ile Phe  
 610 615 620  
 Asp Tyr Thr Ile Asp Phe Ser Lys Arg Glu Ala Thr Asp Ser Gly Ser  
 625 630 635 640  
 Phe Thr Asp Ile Leu Leu Gly Asn Lys Val Lys Glu Ser Leu Ser Phe  
 645 650 655  
 Ile Glu Gly Leu Ile Ser Asp Ile Lys Ser His Ser Leu Lys Ala Gly  
 660 665 670  
 Val Thr Gly Gly Ile Ser Ser Ser Ser Leu Phe Asp Glu Ile Phe Asp  
 675 680 685  
 Glu Leu Asn Leu Asp Gln Ala Thr Ile Arg Thr Leu Val Ala Pro Leu  
 690 695 700  
 Glu Glu Ile Lys Asn Glu Leu Lys Thr Ile Ser Ser Gln Lys Ile Ala  
 705 710 715 720

Asp Ala Thr Val Thr Pro Ser Thr Pro Asn Thr Asn Val Asn Ile Lys  
 725 730 735  
 Thr Ile Ile Ser Lys Ile Lys Lys Ile Leu Met Ile Ser Glu Thr Ile  
 740 745 750  
 Ser Ser Thr Ala Leu Ala Arg Leu Ser Ala Val Leu Ser Ile Leu Gly  
 755 760 765  
 Arg Gly Thr Ser Thr Asn Val Ile Pro Glu Arg Leu Thr Ser Ile Val  
 770 775 780  
 Val Asp Leu Lys Ser Ala Thr Val Pro Gln Glu Val Ala Leu Lys Asn  
 785 790 795 800  
 Gly Val Tyr Lys Leu Lys Asp Gln Phe Lys Leu Thr His Lys Met Ile  
 805 810 815  
 Pro Val Phe Gly Ser Val Gln Leu Gln Ile Pro Glu Lys Ser Thr Val  
 820 825 830  
 Val Gln Ile Ser Val Val Glu His Glu Asn Asp Thr Lys Met Ala Ile  
 835 840 845  
 Ile Thr Leu Asp Asp His Ser Lys Leu Thr Leu Glu Arg Val Ile Leu  
 850 855 860  
 Ser Glu Thr Pro Thr Val Val Gly Leu Thr His Thr Thr Gln Asp Pro  
 865 870 875 880  
 Leu Asp Val Leu Leu Ser Ile Phe Val Lys Met Asp Asn Thr Thr Asp  
 885 890 895  
 Asp Gly Val Met Glu Gly Tyr Leu Asp Leu Asp Leu Asn Ser Lys Ile  
 900 905 910  
 Gly Asn Phe Ile Ser Ala Ile Glu Leu Thr Asp Leu Thr Asn Thr Val  
 915 920 925  
 Lys Ser Ala Ser Val His Pro Pro Gln Leu Lys Val Leu Ala Leu Lys  
 930 935 940  
 Phe Gly Asn Lys Ile Val Asp Val Glu Glu Thr Gly Arg Thr Phe Val  
 945 950 955 960  
 Thr Phe Asp Glu Lys Leu Asn Ser Ile Glu Ile Ile Thr Phe Glu Asn  
 965 970 975  
 Asp Gly Thr Met Thr Ser Lys Phe Tyr Ser Arg Glu Ser Leu Asp Pro  
 980 985 990  
 Thr Thr Tyr Ile Gly His Ala Pro Thr Asp Ile Phe Thr Ser Pro Trp  
 995 1000 1005

Ile Thr Thr His Met His Asn Lys Arg Leu Val Asp Phe Glu Val Pro  
 1010 1015 1020  
 Phe Glu Ala Ile Phe Asp Asp Lys Leu Ile Ser Tyr Tyr Thr Gly Thr  
 1025 1030 1035 1040  
 Asp Val Asn Gly Lys Asn Lys Val Pro Ala Glu Leu Thr Lys Ala Ile  
 1045 1050 1055  
 Cys Gly Lys Glu Asp Val Cys Glu Leu Asn Ile Thr Gly Leu Leu Leu  
 1060 1065 1070  
 Lys Asp Ile Ser Ala Lys Lys Leu Glu Glu Cys Arg Lys Lys Asn Ala  
 1075 1080 1085  
 Ser Ser Gly Thr Pro Ser Gly Gly Thr Pro Ser Asn Val Pro Glu Glu  
 1090 1095 1100  
 Cys Val Ile Lys Ser Asn Leu Gln Thr Val Met Lys Lys Asp Val Thr  
 1105 1110 1115 1120  
 Thr Thr Leu Lys Ser Asp Asp Val Ser Asn Tyr Ser Val Val Ser Ile  
 1125 1130 1135  
 His Phe Tyr Ile Asp Asn Val Phe Arg His Asn Thr Ala Phe Gly Arg  
 1140 1145 1150  
 Ile Lys Ile Gly Asn Leu Asp Leu Pro Ala Phe Ser Ile Gly Phe Ile  
 1155 1160 1165  
 His Ser Ile Phe Val Glu Arg Val Leu Met Gly Asp Lys Ser Leu Ala  
 1170 1175 1180  
 Ser Val Gly Ile Ile Thr Asn Tyr Gly Pro Ser Gly Asp Tyr Glu Leu  
 1185 1190 1195 1200  
 Leu Arg Tyr Met Gln Val Glu Glu Gly Lys Asn Tyr Phe Lys Leu Val  
 1205 1210 1215  
 Gln Gly Pro Glu Ile Thr Ala Asp Tyr Ile Gly Ser Gly Leu Thr Lys  
 1220 1225 1230  
 His Lys Arg Leu Thr Met Asn Gly Ala Ser Thr Gly Ser Ile Gly Phe  
 1235 1240 1245  
 Glu Thr Asn Tyr Lys Glu Ser Ile Leu Phe Asn Glu Phe Met Arg Pro  
 1250 1255 1260  
 Thr Asn Lys Ile Val Thr Leu Phe Tyr Thr Asp Ser Glu Thr Val Asn  
 1265 1270 1275 1280  
 Leu Ile Lys Leu His Ser Leu Glu Asn Val Lys His Gly Val Thr Tyr  
 1285 1290 1295



Ser Ile Tyr Gly Ala Phe Pro Ile Glu Glu Ser Ser Pro Glu Ser Ser  
 1300 1305 1310

<210> 121

<211> 309

<212> PRT

<213> Babesia microti

<400> 121

Gln Leu Trp Ile Arg Met Lys Ser Val Arg Pro Ile Leu Ile His Phe  
 5 10 15

Ile Thr Phe Phe Leu Thr Ser Gly Asn Val Phe Ala Gly Asn Gly Asp  
 20 25 30

Val Asn Gln Tyr Ser Ser Asp Phe Gly Arg Ala Leu Asn Asp Leu Met  
 35 40 45

Ile Ala Phe Asn Glu Ala Lys Lys Met Tyr Ala Lys Phe Ser Glu Gln  
 50 55 60

Ile Thr Asp Thr Met Ile His Thr Cys Lys Asn Ser Ile Asp Ile Leu  
 65 70 75 80

Glu Ala Asp Glu Lys Asn Gly Gly His Lys Asn Tyr Leu Glu Lys Lys  
 85 90 95

Glu Ile Glu Leu Lys Ser Lys Ile Val Glu Phe Asn Ala Ile Phe Ser  
 100 105 110

Asn Ile Asp Leu Asn Asn Ser Thr Val Lys Asn Glu Ile Ile Lys Leu  
 115 120 125

Leu Asn Asp Ile Ser Thr Ile Ser Thr Asp Ile Lys Ser Ile Val Asp  
 130 135 140

Glu Ile Tyr Tyr Lys Ala Leu Gly Thr Ile Glu Gly Glu Asn Ala Glu  
 145 150 155 160

Asn Phe Glu Tyr Glu Ile Lys Lys Lys Lys Ala Glu Leu Leu Arg Asn  
 165 170 175

Leu Leu Asn Asp Asn Ile Lys Pro Ile Met Gly Tyr Leu Thr Glu Ile  
 180 185 190

Tyr Asn Met His Ile Pro Ile Ile Ser Asn Lys Ser Glu Phe Asn Asp  
 195 200 205

Ile Lys Lys Ala Phe Glu Lys His Glu Leu Glu Ala Asn Val Leu Ile  
 210 215 220

Ser Lys Ile Leu Glu Asn Asn Gln Asn Phe Gly Thr Asn Phe Asn Asp  
 225 230 235 240

Ile Leu Asn Glu Val Asn Gly Ala Ile Glu Glu Phe Asn Lys Thr Ile  
 245 250 255

Asp Val Met Asn Asn Thr Ile Gly Asp Leu Gly Ile Val Ile Asp Ser  
 260 265 270

Gly Ile Ile Ser Ser Ile Lys Ser Tyr Ile Ser Thr Ile Ala Lys Ile  
 275 280 285

Ser Asn Ser Ile Ile Pro Gly Gln Met Ala Leu Val Phe Thr Ala Leu  
 290 295 300

Ile Leu Ile Leu Asn  
 305

<210> 122  
 <211> 222  
 <212> PRT  
 <213> Babesia microti

<400> 122  
 Arg Leu Thr Leu Thr Leu Ala Thr Asn Thr Arg Gly Gly Ala Gly Thr  
 5 10 15

Asp Ala Thr Ser Val Ser Ile Ala Asn Ser Ile Pro Thr Ser Ala Ala  
 20 25 30

Thr Ala Ala Gln Ser Thr Thr Ala Ala Thr Ser Thr Thr Ala Ala Thr  
 35 40 45

Ser Thr Thr Ser Ala Thr Ser Thr Thr Ser Ala Thr Ser Thr Thr Ala  
 50 55 60

Thr Thr Ser Thr Thr Thr Ala Thr Ser Thr Thr Thr Ala Thr Ser Thr  
 65 70 75 80

Thr Ala Thr Thr Ser Thr Thr Ala Ala Thr Ser Thr Ile Ser Pro Ser  
 85 90 95

Leu Glu Thr Thr Gln Asp Val Ala Val Thr Asn Ile Val Asn Leu Asn  
 100 105 110

Ile Asn Glu Ile Gly Phe Val Asp Gln Val Pro Glu Gly Leu Ser Ser  
 115 120 125

Ser Tyr Val Phe Ser Thr Asp Gly Ile Phe Thr Lys Val Thr Pro Ala  
 130 135 140

Thr Gly Phe Ser Ile Gly Cys Val Ile Phe Gly Asn Gln Leu Ile Pro  
 145 150 155 160

Gln Ser Met Asp Val Ile Thr Arg Thr Val Ser Tyr Thr Thr Lys Tyr  
165 170 175

Pro Leu Ile Val Val Arg Ile Gln Asp Lys Thr Ser Ser Ser Thr Ser  
180 185 190

Thr Val Tyr Tyr Glu Gln Ser Gly Leu Gln Ser Ser Lys Phe Val Leu  
195 200 205

Arg Asp Asp Pro Glu Phe Thr Ser Gln Leu Thr Ser Ser Phe  
210 215 220

<210> 123

<211> 452

<212> PRT

<213> Babesia microti

<400> 123

Ile Ile Met Lys Ile Asn Ile Asp Asn Ile Ile Leu Ile Asn Leu Ile  
5 10 15

Ile Leu Leu Asn Arg Asn Val Val Tyr Cys Val Asp Lys Asn Asp Val  
20 25 30

Ser Leu Trp Lys Ser Lys Pro Ile Thr Thr Val Ser Thr Thr Asn Asp  
35 40 45

Thr Ile Thr Asn Lys Tyr Thr Ser Thr Val Ile Asn Ala Asn Phe Ala  
50 55 60

Ser Tyr Arg Glu Phe Glu Asp Arg Glu Pro Leu Thr Ile Gly Phe Glu  
65 70 75 80

Tyr Met Ile Asp Lys Ser Gln Gln Asp Lys Leu Ser His Pro Asn Lys  
85 90 95

Ile Asp Lys Ile Lys Ile Ser Asp Tyr Ile Ile Glu Phe Asp Asp Asn  
100 105 110

Ala Lys Leu Pro Thr Gly Ser Val Asn Asp Ile Ser Ile Ile Thr Cys  
115 120 125

Lys His Asn Asn Pro Val Leu Ile Arg Phe Ser Cys Leu Ile Glu Gly  
130 135 140

Ser Ile Cys Tyr Tyr Phe Tyr Leu Leu Asn Asn Asp Thr Asn Lys Trp  
145 150 155 160

Asn Asn His Lys Leu Lys Tyr Asp Lys Thr Tyr Asn Glu His Thr Asp  
165 170 175

Asn Asn Gly Ile Asn Tyr Tyr Lys Ile Asp Tyr Ser Glu Ser Thr Glu

180	185	190
Pro Thr Thr Glu Ser Thr Thr Cys Phe Cys Phe Arg Lys Lys Asn His		
195	200	205
Lys Ser Glu Arg Lys Glu Leu Glu Asn Tyr Lys Tyr Glu Gly Thr Glu		
210	215	220
Leu Ala Arg Ile His Cys Asn Lys Gly Lys Cys Val Lys Leu Gly Asp		
225	230	235
Ile Lys Ile Lys Asp Lys Asn Leu Glu Ile Tyr Val Lys Gln Leu Met		
245	250	255
Ser Val Asn Thr Pro Val Asn Phe Asp Asn Pro Thr Ser Ile Asn Leu		
260	265	270
Pro Thr Val Ser Thr Thr Asn Asp Thr Ile Thr Asn Lys Tyr Thr Gly		
275	280	285
Thr Ile Ile Asn Ala Asn Ile Val Glu Tyr Cys Glu Phe Glu Asp Glu		
290	295	300
Pro Leu Thr Ile Gly Phe Arg Tyr Thr Ile Asp Lys Ser Gln Gln Asn		
305	310	315
Lys Leu Ser His Pro Asn Lys Ile Asp Lys Ile Lys Phe Phe Asp Tyr		
325	330	335
Ile Ile Glu Phe Asp Asp Asp Val Lys Leu Pro Thr Ile Gly Thr Val		
340	345	350
Asn Ile Ile Tyr Ile Tyr Thr Cys Glu His Asn Asn Pro Val Leu Val		
355	360	365
Glu Phe Ile Val Ser Ile Glu Glu Ser Tyr Tyr Phe Tyr Phe Tyr Ser		
370	375	380
Met Asn Asn Asp Thr Asn Lys Trp Asn Asn His Lys Ile Lys Tyr Asp		
385	390	395
Lys Arg Phe Asn Lys His Thr Asp Met Asn Gly Ile Asn Cys Tyr Glu		
405	410	415
Tyr Val Leu Arg Lys Cys Ser Ser Tyr Thr Arg Lys Asn Glu Tyr Glu		
420	425	430
His Lys Glu Leu Ala Arg Ile His Cys Asn Glu Glu Lys Cys Val Asn		
435	440	445
Val Lys Val Arg		
450		

<210> 124  
 <211> 732  
 <212> PRT  
 <213> Babesia microti

<400> 124  
 Val Pro Thr Leu Ser Ser Leu Val Lys Leu Phe Ser Glu Val Met Leu  
                   5                  10                  15  
 Arg Val Lys Asp Ala Ser Ser Thr Glu Ala Thr Ile Arg Met Phe Leu  
                   20                  25                  30  
 Arg Phe Asn Ala Phe Ile Lys Phe Leu Asn Glu Glu Lys Ser Arg Gly  
                   35                  40                  45  
 Asp Lys Ser Ala Leu Asn Asp Glu Gly Leu Met Arg Phe Ile Ser Met  
                   50                  55                  60  
 Thr Ser Gly Phe Ile Asp Asp Leu Glu Leu Val Leu Asp Glu Leu Ser  
                   65                  70                  75                  80  
 Lys His Ser Leu Leu Ile Asn Asn Glu Gly Ala Lys Ser Met Leu Ser  
                   85                  90                  95  
 Ser Leu Ile Leu Ser Phe Arg Tyr Ile Asn His Ile Arg Asn Leu Ile  
                   100                  105                  110  
 Asn Gly Ile Tyr Leu Gly Leu Asn Asn Pro Ser Ser Ser Ile Gly Glu  
                   115                  120                  125  
 Thr Ala Gln Glu Thr Thr Glu Pro Ser Thr Pro Thr Pro Thr Pro Ser  
                   130                  135                  140  
 Thr Gln Thr Ile Leu Lys Pro Lys Gly Ser Glu Ile Arg Gly Tyr Ile  
                   145                  150                  155                  160  
 Ile Lys Val Asp Gln Thr Ala Asn Leu Ile Thr Phe Ile Asp Ala Leu  
                   165                  170                  175  
 Ile Lys Glu Leu Asn Val His Ile Lys Gln Thr Thr Thr Ser Ser Val  
                   180                  185                  190  
 Val Gly Thr Lys Glu Thr Asn Gly Thr Thr Ser Gly Ser Pro Glu Ser  
                   195                  200                  205  
 Asn Pro Gly Ser Thr Asp Ser Gly Ser Ile Gln Ala Glu Val Ala Glu  
                   210                  215                  220  
 Leu Leu Lys Lys Phe Ala Thr Ile Ala Ser Phe Asp Glu Lys Phe Thr  
                   225                  230                  235                  240  
 Asn Leu His Ile Asn Lys Pro Phe Ala Asp Ala Leu Ile Lys Arg Leu  
                   245                  250                  255

Asn Glu Ile Lys Ala Glu Leu Ser Ser Asn Ser Gly Thr Pro Pro Lys  
 260 265 270  
 Leu Pro Asp Ile Ser Cys Leu Arg Leu Ser Glu Ile Val Gln Lys Leu  
 275 280 285  
 Asn Arg Leu Ile Lys Phe Asn Thr Ser Arg Leu Ile Asn Lys Ser Phe  
 290 295 300  
 Pro Glu Leu Cys Lys Leu Phe Ile Lys Met Pro Asp Val Asp Ser Asn  
 305 310 315 320  
 Lys Phe Met Ala Leu Asp Val Asp Ile Ser Asn Thr Leu Val Asn Arg  
 325 330 335  
 Arg Val Arg Tyr Ser Asp Gly Arg Phe Thr Ile Val Ser Thr Gly Ser  
 340 345 350  
 Asn Phe Arg Tyr Thr Leu Ala Pro Thr Ala Ala Gly His Asp Leu Ser  
 355 360 365  
 Leu Phe Ser Gln Leu Pro Ile Ser Met Ile Thr Val Thr Ser Pro Gln  
 370 375 380  
 Glu Gln Ala Leu Thr Ser Cys Val Ser His Gly Asn Glu Phe Ser Ile  
 385 390 395 400  
 Val Ser Thr Ala Gly Lys Thr Thr Tyr Thr Thr Gln Ser Lys Leu Leu  
 405 410 415  
 Ser Leu Phe Lys Leu Ser Ala Glu Thr Leu Arg Asp Phe Asn Glu Ala  
 420 425 430  
 Arg Phe Ala Leu Gly Asn Met Thr Asp Ser Ala Asn Lys Ser Lys Ala  
 435 440 445  
 Leu Glu Val Tyr Lys Ser Thr Leu Thr Thr Met Lys Ser Ile Ser Val  
 450 455 460  
 Glu Leu Glu Lys Ile Phe Gly Ile Leu Lys Ser Thr Pro Asn Ile Thr  
 465 470 475 480  
 Phe Glu Ser Val Val Ser Lys Tyr Lys Leu Thr Gly Val Asn Thr Val  
 485 490 495  
 Asp Thr Ala Asn Ala Asp Val Ile Asn Glu Thr Met Phe Asp Asp Leu  
 500 505 510  
 Ser Lys Ala Ile Ser Ser Tyr Leu Tyr Ser Leu Ile Ser Ile Ile Phe  
 515 520 525  
 Pro Glu Asp Ile Lys Gly Gln Gly Thr Ser Glu Gly Gln Gln Thr Ser  
 530 535 540

Glu Gly Gln Gln Thr Ser Glu Gly Gln Gln Thr Ser Gly Asp Gln Asp  
545 550 555 560

Thr Ser Gly Gly Gln Asp Thr Asn Glu Thr Ile Phe Ser Tyr Leu Tyr  
565 570 575

Ser Leu Ile Ser Ile Ile Phe Pro Glu Asp Ile Lys Gly Gln Gly Thr  
580 585 590

Ser Ala Gln Leu Leu Glu Tyr Arg Thr Gln Leu Ala Ser Leu Ser Lys  
595 600 605

Ile Lys Ser Leu Arg Lys Lys Ile Lys Arg Arg Leu His Ser Tyr  
610 615 620

Pro Thr Phe Cys Ser Leu Ser Tyr Val Pro Ser Thr Ser Val Ser  
625 630 635

Phe Cys Arg Asn Glu Phe Leu Leu Asn Met Val Ser Phe Ser Gln Ser  
640 645 650

Leu Phe Ile Leu Phe Pro Leu Leu Phe Ser Cys Trp Thr Glu Val  
655 660 665

Leu Met Gly Asn Tyr Ile Tyr Pro His Tyr Phe Ser Pro Ser Ile Leu  
670 675 680 685

Met Leu Tyr Thr Leu Phe Ile Thr Pro Arg Val Ser Pro Pro Cys Leu  
690 695 700

Ser Pro Phe Leu Pro Thr Ser Pro Gln Pro Thr Thr His Gly Val  
705 710 715

Asn Thr Pro Gln Lys Cys Cys Leu Pro Gly Thr Leu Ser Gly  
720 725 730

Lys Ala

<210> 125

<211> 334

<212> PRT

<213> Babesia microti

<400> 125

Leu Ser Asn Ser Ser Ile Arg Gly Arg Val Trp Leu Ile Phe Pro Arg  
5 10 15

Tyr Leu Leu Lys Asp Tyr Lys Met Ile Leu Val Cys Ile Cys Phe Val  
20 25 30

Asn Ile Glu Asp Leu Gly Thr Gln Lys Asn Lys Ser Ser Pro Leu Gly  
35 40 45

Lys Ile Gly Thr Ser Met Asp Asp Ile Ile Ala Met Phe Ser Asn Pro  
 50 55 60  
 Asn Met Tyr Leu Val Lys Val Ala Tyr Leu Gln Ala Ile Glu His Ile  
 65 70 75 80  
 Phe Leu Ile Ser Thr Lys Tyr Asn Asp Ile Phe Asp Tyr Thr Ile Asp  
 85 90 95  
 Phe Ser Lys Arg Glu Ala Thr Asp Ser Gly Ser Phe Thr Asp Ile Leu  
 100 105 110  
 Leu Gly Asn Lys Val Lys Glu Ser Leu Ser Phe Ile Glu Gly Leu Ile  
 115 120 125  
 Ser Asp Ile Lys Ser His Ser Leu Lys Ala Gly Val Thr Gly Gly Ile  
 130 135 140  
 Ser Ser Ser Ser Leu Phe Asp Glu Ile Phe Asp Glu Leu Asn Leu Asp  
 145 150 155 160  
 Gln Ala Thr Ile Arg Thr Leu Val Ala Pro Leu Glu Glu Ile Lys Asn  
 165 170 175  
 Glu Leu Lys Thr Ile Ser Ser Gln Lys Ile Ala Asp Ala Thr Val Thr  
 180 185 190  
 Pro Ser Thr Pro Asn Thr Asn Val Asn Ile Lys Thr Ile Ile Ser Lys  
 195 200 205  
 Ile Lys Lys Ile Leu Met Ile Ser Glu Thr Ile Ser Ser Thr Ala Leu  
 210 215 220  
 Ala Arg Leu Ser Ala Val Leu Ser Ile Leu Gly Arg Gly Thr Ser Thr  
 225 230 235 240  
 Asn Val Ile Pro Glu Arg Leu Thr Ser Ile Val Val Asp Leu Lys Ser  
 245 250 255  
 Ala Thr Val Pro Gln Glu Val Ala Leu Lys Asn Gly Val Tyr Lys Leu  
 260 265 270  
 Lys Asp Gln Phe Lys Leu Thr His Lys Met Ile Pro Val Phe Gly Ser  
 275 280 285  
 Val Gln Leu Gln Ile Pro Glu Lys Ser Thr Val Val Gln Ile Ser Val  
 290 295 300  
 Val Glu His Glu Asn Asp Thr Lys Met Ala Ile Ile Thr Leu Asp Asp  
 305 310 315 320  
 His Ser Lys Leu Thr Leu Glu Arg Val Ile Leu Ser Glu Thr  
 325 330



<210> 126  
 <211> 268  
 <212> PRT  
 <213> Babesia microti

<400> 126

Lys Tyr Lys Tyr Ala Leu Glu Ser Gly Glu Pro Arg Arg Val Glu Met  
                           5                          10                          15

Gly Ser Arg Phe Ser Glu Met Gly Ser Arg Phe Ser Val Ser Pro Trp  
                           20                          25                          30

Ala Trp Leu Glu Cys Pro Ser Cys Leu Pro Ser Pro Leu Phe Gln Val  
                           35                          40                          45

Thr Met Ser Pro Ser Gln Ser Pro Arg Trp Ser Ser Cys Pro Pro Leu  
                           50                          55                          60

Ser Ser Trp Leu Leu Pro His Pro Arg His Ile Pro Ile Lys Asp Cys  
                           65                          70                          75                          80

Arg Leu Ser Tyr Cys Tyr Pro Cys Arg Val Leu Met Pro Leu Arg Pro  
                           85                          90                          95

Gly Thr Ser Ser Ala Ser Val Pro Ser Arg Pro His Ser Ala Pro Pro  
                           100                          105                          110

His Val Ala Gly Pro Pro Ser Ala Pro Arg Asp Leu Gln Tyr Ser Leu  
                           115                          120                          125

Ser Arg Ser Pro Leu Ala Leu Arg Leu Arg Trp Leu Pro Pro Ala Asp  
                           130                          135                          140

Ser Gly Gly Arg Ser Asp Val Thr Tyr Ser Leu Leu Cys Leu Leu Cys  
                           145                          150                          155                          160

Gly Arg Asp Gly Pro Ala Gly Ala Cys Gln Pro Cys Gly Pro Arg Val  
                           165                          170                          175

Ala Phe Val Pro Arg Gln Ala Gly Leu Arg Glu Arg Ala Ala Thr Leu  
                           180                          185                          190

Leu His Leu Arg Pro Gly Ala Arg Tyr Thr Val Arg Val Ala Ala Leu  
                           195                          200                          205

Asn Gly Val Ser Gly Pro Ala Ala Ala Ala Glu Ala Thr Tyr Ala Gln  
                           210                          215                          220

Val Thr Val Ser Thr Gly Pro Gly Gly Glu Ala Thr Arg Pro Ser Gly  
                           225                          230                          235                          240

Val Arg Pro Pro Pro Gln Pro Gln Phe Pro Leu Cys Ile Pro Ser His

245

250

255

Ser Gly Thr His Val Thr Thr Pro His Ala Pro Gly  
260 265

&lt;210&gt; 127

&lt;211&gt; 386

&lt;212&gt; PRT

&lt;213&gt; Babesia microti

&lt;400&gt; 127

Val Asn Ala Leu Ile Lys Glu Leu Asn Ala His Ile Lys Gln Arg Ala  
5 10 15

Thr Ser Thr Thr Thr Ile Ile Ile Glu Thr Asn Ala Lys Asp Val Asp  
20 25 30

Glu Leu Val Lys Lys Phe Ala Thr Ile Ala Ser Phe Asp Asp Lys Phe  
35 40 45

Lys Asn Val Phe Phe Asp Asn Ser Val Ile Asp Glu Ile Val Lys Thr  
50 55 60

Leu Glu Lys Met Lys Val Glu Ser Asp Thr Val Leu Pro Ser Cys Asn  
65 70 75 80

Gly Ile Gln Thr Thr Glu Asn Ser Ser Thr Asp Pro Tyr Thr Val Leu  
85 90 95

Ser Lys Leu Ile Lys Lys Ile Asn Asp Ser Ile Ile Arg Pro Met Thr  
100 105 110

Ser Arg Leu Ile Asn Lys Ser Phe Pro Glu Leu Cys Lys Leu Phe Ile  
115 120 125

Lys Met Pro Asp Val Asp Ser Asn Lys Phe Met Ala Leu Asp Val Asp  
130 135 140

Ile Ser Asn Thr Leu Val Asn Arg Arg Val Arg Tyr Ser Asp Gly Arg  
145 150 155 160

Phe Thr Ile Val Ser Thr Gly Ser Asn Phe Arg Tyr Thr Leu Ala Pro  
165 170 175

Thr Ala Ala Gly His Asp Leu Ser Leu Phe Ser Gln Leu Pro Ile Ser  
180 185 190

Met Ile Thr Val Thr Ser Pro Gln Glu Gln Ala Leu Thr Ser Cys Val  
195 200 205

Ser His Gly Asn Glu Phe Ser Ile Val Ser Thr Ala Gly Lys Thr Thr  
210 215 220

Tyr Thr Thr Gln Ser Lys Leu Leu Ser Leu Phe Lys Leu Ser Ala Glu  
225 230 235 240

Thr Leu Arg Asp Phe Asn Glu Ala Arg Phe Ala Leu Gly Asn Met Thr  
245 250 255

Asp Ser Ala Asn Lys Ser Lys Ala Leu Glu Val Tyr Lys Ser Thr Leu  
260 265 270

Thr Thr Met Lys Ser Ile Ser Val Glu Leu Glu Lys Ile Phe Gly Ile  
275 280 285

Leu Lys Ser Thr Pro Asn Ile Thr Phe Glu Ser Val Val Ser Lys Tyr  
290 295 300

Lys Leu Thr Gly Val Asn Thr Val Asp Thr Ala Asn Ala Asp Val Ile  
305 310 315 320

Asn Glu Thr Met Phe Asp Asp Leu Ser Lys Ala Ile Ser Ser Tyr Leu  
325 330 335

Tyr Ser Leu Ile Ser Ile Ile Phe Pro Glu Asp Ile Lys Gly Gln Gly  
340 345 350

Thr Ser Glu Gly Gln Gln Thr Ser Gly Gly Gln Asp Thr Asn Glu Thr  
355 360 365

Ile Phe Ser Tyr Leu Tyr Ser Leu Ile Ser Ile Ile Phe Pro Glu Asp  
370 375 380

Ile Lys  
385

<210> 128

<211> 1371

<212> DNA

<213> Babesia microti

<400> 128

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acataacact agggacttgg cattgcatat ctgtaaataat aattgaaacc aaaataaaat 60
attggtgagt tccataggtt gggttgttca cagtgcacatt taaaagtga attcttgaga 120
gctggtttgg aggttctatt aggggagtg cgtacttgta taccttggac tgaagaccag 180
tcctcctcta ttccgggaag gtcgtcctct tcgaccaagc atgcagcttc aggatggaca 240
cacatggagt gttgaggag gaaagagatc cccctaagcc agatagatca actaaatgaa 300
ccttgaaaat aaatggggtg acagatgtag cagcgagatt gccctcacat actgaaaatg 360
aaataattaa ccaccattag ttttccatct gatacctagg cactctctaa tttaattcaa 420
cattctgaaa agtgtctttg aaagattggt ggcaaccacc tattatccct ccaatgggta 480
ggcaaagaca ggtgaatcga agtatgttgt agggaggcta gtcttaatat agggttcaac 540
tacagggaag acttcatgct aagatgctat ttcagataaa aaagaaatgt gtgtttttta 600
tctgacttct tattgtggca ccatagagca ttgaaaagca ccgtatgctg ttttgtggta 660
tcagatcaca ttattttcac agttgaaagg cattataaaa caggttttgt tgacactaga 720
ctttaatccc agcatttggg aaacagaggc aggtggatct tggagattcg tgctagcctg 780
gtctacagtg ggagtttaag gatagctggg atttcaatga gaaaccatgt ccctgggggtg 840
```

```

aggggaagga agaaaaaag ataatgtagt atgatacagg ataaaaattta atagcatctt 900
tttaagaatt atgagaacac tctctgtcac tgggttctat ggattcagtt tattgtttaa 960
ctgtgggtgt ttagctctgc ttctatcagt cactggatga aggtactaga atggcatata 1020
acactggaac acttaacagc ttacttgagg ctagtaagtg aagcacatga tgacaggat 1080
ggaggggttg tgcagaatgg aactaagttc tagagaattt gcagaaatgg tcattatagg 1140
acactgggtg aaaggtgcct ctctgtacac ttctaaagc tctgtccgtt gcttgataa 1200
tatgtgatct cttggacagt gatgtacctg acctccctc tgtctctgtt ctctttctcc 1260
ttcttttccc ctccctctg cttccctcc tctgcccctc cctctcttct attcccttct 1320
ctctctctc attcattccc cttgctcttc tctcccttct tctctttctt t 1371

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<210> 129

<211> 2417

<212> DNA

<213> Babesia microti

<400> 129

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attttgtact gttcaaagt gtaatatatt tgtgaaagaa gaaaataatt taagtcaaga 60
ggatgatgaa agggcagaag taatacttga gataagcact tcacatctta caattaaaac 120
tcttctgtgt ctacctgcaa attcatgaca gatgaaatta acttgttttc tattogtttt 180
ctcctcttat ttctgccagt attataattt caggaaggaa catgcatcat aaattacatg 240
taactttcat gttgcagtga tgctgttttc tatttttgat ctcatgtgac agcagtaaaag 300
tcatacaaaa aataataaat acctctcatg gagcttgcca ttctctctgc atcttttttg 360
gggaagaagt ggcctgaaga gtagagcgtt aagactcaca aagtcaagaa ctttcagata 420
gaaccagacc atcaattgca gccacaatgg gtgctgaatc caacttcttg atttgttttt 480
aaaggtatta ggaataatat tgattagcac ttgtcagggt cacaatccag gacctaatat 540
aagacacacc tcaggtgaat ttctgagaga ttatccatat tagttaattg aggagggaaa 600
ctctacctta attgtccatg ggaccagttc aacagctaga gtactgaact gcataaaaag 660
gagaaagtga cctgggcagg aacatgacca ttctcttgcg cctcgtgca gaagaaatgt 720
gatcagcctc tttaaagtc tgtagcagt actcccatgc cacaatgaac tgtagccaat 780
ttcatcatac tgtcctagct tctttctct ctttataata ctttgtactg atgtgaccaa 840
attctgaacc ctcaagtcac caagaaacct attccaaggc aaaagcaaac agacttgtat 900
tatttaacaa gttaatgcca tctactccgg tcttcatac gttcatcatg gtgggtggaa 960
tgagaaggac cccaatgggc catgaggcag ggaatttatt gggcacagca aggggagtgt 1020
ctagggatcat tgtagctga ctcagagtgc agtgctttgc ctgaatcct gagcgcat 1080
attcggctct taaggtagcc aaccatgcct ggggggactg tctgcttca atagcagtaa 1140
aggccgaaca atcatggctg cattgtgact ttgtgtgact ctaatcttac atagaagagt 1200
aattcagagc cccgtgttgc tcttctggcc cctgctgtg ggagggtgcc gacgtgatcc 1260
agagccatga gacaccctg ccatcatccg tccccctccg cgccacgcct tcttcatgcc 1320
tcgcttatgg ttctcctgtg tggctgcaaa cgtttgaaaa cacgagcaac aagcaacacc 1380
ttctgaaaat taacagcaag gttttcttaa gaattcacca agtgaggct ggagagaggg 1440
cccagagggt aagagtactg gctgctcttc cagaggctct gagttcaatt cccagcacc 1500
acagggtggc tcacaacct ctgtaatgag atcgtctgcc ctcttctggc ccgaggcag 1560
aacactgtat atataataag taaataaatc tctttttaa aaagagtga gtactgaagc 1620
aaccocatat caccgtgtgt caatatgtg tttaaaaaa aagaattaac taagtgcagg 1680
atactgtggc cattgtctgc ccctggaagg tctgtgccc caggaaaagt ctgctgtctc 1740
ctgtctccag gccatgcaga gggctgaatc ccccgctccg cccccacacg cacaacatat 1800
actcgttttg tctcctctgc agaattctaga ttacacatac atattacacg caagcagaaa 1860
gttgaccgtt agagaaattg ctttctatta atttttaatt taaggagat tgactacatc 1920
aatgaattaa gaactgatac atcaatattg aattctggaa gatgaactgg ggagaatgct 1980
ccatgtggaa attgttcacc atataacct ggggatattg gctcagcctc agtactcttg 2040
tagcaaactg gacacagcag cacaccttga gcccttgac aggacatgca aagacagaat 2100
gatgatacca gtggcttttg ggccagccaa gtctacccca ttaagggaag actaacagtc 2160
ggtaaccagg aactcagggt cagtacctgc ctgtggcttt ataaaactta cttctagttt 2220
agatttccat tttatgtttc attattccag atattctgtt tttgatctat ctgcttatga 2280

```

```

tttatatttc ctaaattctc aacttgtaaa tggcattaga aggatggaat tgtacagttt 2340
cactttgtaa ttgttaagtc ctatgctgtg tttttgcatg tttttgaagt gttttcagta 2400
agtatttact tatttat                                     2417

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<210> 130
<211> 1333
<212> DNA
<213> Babesia microti

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<400> 130
aggtcacaca tagaggagtg tggccaatta aacactcaag caccctatgt cttggtttgc 60
tctctattgc tgtgataaac accagagcta agcccaactt gaagttgtca catggtctcc 120
acacaaatac acacacacac acacacacac acacacctat gtatgcacat gcaacccac 180
acacatacaa aaaaaaaga acctctactc tttacagca ataaaaatg aactaggtga 240
aaagaaaacc aaccttgctt catcatttag tcatagaaaa tgatactgtg gttgtcattt 300
actatcatta acctaaaata aatgtgtccc tacctaaggg tataaactgt tatctggcct 360
tgtacagatt ttggatcttg aattctttta gtgggttgcc caatagcatt ttaaggtccc 420
agaataaata gacaggatga aatgggatgg gctagagtag aatggaggct aatatcagaa 480
caaatacagac agtgaggata tacttggtt tacaagaatc ctatttacac acacatgcac 540
atgtactgtc agtatgtact gctacatcaa caacatctgc tacatcaaca acagctacca 600
catcaacaac aactgccaca tcaacaacaa ctgccacatc aacaacagct accacatcaa 660
caacagctgc cacatcaaca atttctcgt ctctggagac cacacaagat gttgctgtca 720
caaataattgt gaatcttaac ataaacgaaa taggatttgt tgatcaagtt ccagaggggtc 780
tttcttctag ttacgttttt tctactgatg gaatctttac caaagttacc ccagctacag 840
ggttttcaat tggttgtgta atatttgga atcaattaat tccacagtcc atggatgta 900
tcactaggac cgtttcatac accactaaat atcctttgat tgttgtagg attcaagata 960
agacttcgag ttctacttca accgtttact atgagcaatc tggtttaca tctagcaaat 1020
ttgttttgag ggatgaccca gaatttatta ttctcaaaa tcgaagtagt acttatacag 1080
tcaatgacat aacatataaa tcatttgata tttctagtgc cgatgataac gaatttttaa 1140
aaatatcatt aagtgatggg agcatgttgt acaccaataa tccagattcc aaaatttaca 1200
tcagcgaagt taaggttggg gagataacaa taccaataaa tataacatca caatatacac 1260
tgatcaaatt atcatttaat ggtgaattgg ttgagttgta tactacagga tgtttcgggtg 1320
aacataatat taa                                     1333

```

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<210> 131
<211> 537
<212> DNA
<213> Babesia microti

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<400> 131
ttatggaggg ctatttagat ctogatttga attccaagat tggtaacttt atttcagcca 60
tcgaactcac taacctgacc aacacggtaa aatcagcgag cgtccaccct cccaactaa 120
aagtgttggc tctgaagttt ggcaacaaga tcgttgatgt cgaggagaca ggcaggacat 180
ttgttacatt tgatgagaag ttgaattcaa tagaaataat taccttcgaa aatgatggca 240
ctatgacatc aaaaatttat tccagggagt ccctagactc aacaacctac attggacatg 300
cctctacgta cacacttccc gaagtgttta ccaggtcatt atgtggtaaa gaggacttat 360
gtacgcttga cattacggat ctattgttga aagagattag tgctaagaaa ttggaggagt 420
gtaggaagaa gaatgcattt agtgggtact catctggtgg tacaccttct aatgttccag 480
aggagtgtgt aattagaacc aacttacaga tggttatgaa gaagaatgct cgtgccg 537

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```

<210> 132
<211> 178
<212> PRT
<213> Babesia microti

```

Val Cys Thr Ala Thr Ser Thr Thr Ser Ala Thr Ser Thr Thr Ala Thr  
35 40 45

Thr Ser Thr Thr Thr Ala Thr Ser Thr Thr Thr Ala Thr Ser Thr Thr  
 50 55 60  
 Ala Thr Thr Ser Thr Thr Ala Ala Thr Ser Thr Ile Ser Pro Ser Leu  
 65 70 75 80  
 Glu Thr Thr Gln Asp Val Ala Val Thr Asn Ile Val Asn Leu Asn Ile  
 85 90 95  
 Asn Glu Ile Gly Phe Val Asp Gln Val Pro Glu Gly Leu Ser Ser Ser  
 100 105 110  
 Tyr Val Phe Ser Thr Asp Gly Ile Phe Thr Lys Val Thr Pro Ala Thr  
 115 120 125  
 Gly Phe Ser Ile Gly Cys Val Ile Phe Gly Asn Gln Leu Ile Pro Gln  
 130 135 140  
 Ser Met Asp Val Ile Thr Arg Thr Val Ser Tyr Thr Thr Lys Tyr Pro  
 145 150 155 160  
 Leu Ile Val Val Arg Ile Gln Asp Lys Thr Ser Ser Ser Thr Ser Thr  
 165 170 175  
 Val Tyr Tyr Glu Gln Ser Gly Leu Gln Ser Ser Lys Phe Val Leu Arg  
 180 185 190  
 Asp Asp Pro Glu Phe Ile Ile Pro Gln Asn Arg Ser Ser Thr Tyr Thr  
 195 200 205  
 Val Asn Asp Ile Thr Tyr Lys Ser Phe Asp Ile Ser Ser Ala Asp Asp  
 210 215 220  
 Asn Glu Phe Leu Lys Ile Ser Leu Ser Asp Gly Ser Met Leu Tyr Thr  
 225 230 235 240  
 Asn Asn Pro Asp Ser Lys Ile Tyr Ile Ser Glu Val Lys Val Gly Glu  
 245 250 255  
 Ile Thr Ile Pro Ile Asn Ile Thr Ser Gln Tyr Thr Leu Ile Lys Leu  
 260 265 270  
 Ser Phe Asn Gly Glu Leu Val Glu Leu Tyr Thr Thr Gly Cys Phe Gly  
 275 280 285  
 Glu His Asn Ile  
 290

&lt;210&gt; 134

&lt;211&gt; 215

&lt;212&gt; PRT

&lt;213&gt; Babesia microti

&lt;400&gt; 134

Val Gln Thr Phe Glu Asn Asp Gly Thr Met Thr Ser Lys Phe Tyr Ser  
                                   5                                  10                                  15

Arg Glu Ser Leu Asp Pro Thr Thr Tyr Ile Gly His Ala Pro Thr Asp  
                                   20                                  25                                  30

Ile Phe Thr Ser Pro Trp Ile Thr Thr His Met His Asn Lys Arg Leu  
                                   35                                  40                                  45

Val Asp Phe Glu Val Pro Phe Glu Ala Ile Phe Asp Asp Lys Leu Ile  
                                   50                                  55                                  60

Ser Tyr Tyr Thr Gly Thr Asp Val Asn Gly Lys Asn Lys Val Pro Ala  
                                   65                                  70                                  75                                  80

Glu Leu Thr Lys Ala Ile Cys Gly Lys Glu Asp Val Cys Glu Leu Asn  
                                   85                                  90                                  95

Ile Thr Gly Leu Leu Leu Lys Asp Ile Ser Ala Lys Lys Leu Glu Glu  
                                   100                                  105                                  110

Cys Arg Lys Lys Asn Ala Ser Ser Gly Thr Pro Ser Gly Gly Thr Pro  
                                   115                                  120                                  125

Ser Asn Val Pro Glu Glu Cys Val Ile Lys Ser Asn Leu Gln Thr Val  
                                   130                                  135                                  140

Met Lys Lys Asp Val Thr Thr Thr Leu Lys Ser Asp Asp Val Ser Asn  
                                   145                                  150                                  155                                  160

Tyr Ser Val Val Ser Ile His Phe Tyr Ile Asp Asn Val Phe Arg His  
                                   165                                  170                                  175

Asn Thr Ala Phe Gly Arg Ile Lys Ile Gly Asn Leu Asp Leu Pro Ala  
                                   180                                  185                                  190

Phe Ser Ile Gly Phe Ile His Ser Ile Phe Val Glu Arg Val Leu Met  
                                   195                                  200                                  205

Gly Asp Lys Ser Leu Ala Ser  
                                   210                                  215

&lt;210&gt; 135

&lt;211&gt; 2560

&lt;212&gt; DNA

&lt;213&gt; Babesia microti

&lt;400&gt; 135

agtgattctc ataaaaaacc aatattaata caattttctg ctactatagg aaaatcaacc 60  
 cgctattatt tctacaaatt gaaggataat aatgaatgga aaaatgaaaa attagaatgt 120  
 accagtatta gtcatcaagt tgacgataat cgtattgaat attatgaaac cttttgtgat 180



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ggtgcctttc ccccttataa tacagaatat ggtaaacaaa aatgtagtga gcaaaaatga 240
gtaaaagtgt atagtattaa ggataagaat ttggaaattt atgtaaaata atttaatgaa 300
gtataatatt atttaaaata attcgaaatt taagaaatta atataattaa ttattataaa 360
aataaagtta tttatatcta aattttataat aatcaaattg ttatttaaca tatggatcta 420
tattgtgtga tgaacaatg gattattaag ggaatcatac cattgtcagt taaaagtgat 480
attggtaaca atattacaaa tatatccaat gatactttta tattaataag catctatact 540
tgcaatcatt ataaactgga gatacgttta tattaacatt gtattaggaa taaggataaa 600
cacaaatgat atgccataat aaaagtaaag tcaaattgact agtatattat acaacgataa 660
agtaataata taaaatatac taatatatct atgttatata aaatatgtct atactatagt 720
atttatttat gtgatatagt catatatttg tagaaataat tagtattatt tatgttatca 780
tacaatattt atcattatca aatcttactg ttatattatt attattatag agcaattttt 840
atacaatata caataaaaatt aagcgataaa ccataaacat cacgtatgca ggcaaaataa 900
gacaaaatta tttgacccca tataataaat taactatggt attacataat aatcaacaag 960
aatataacgt ctatcaattt ataacttgaa cttatattta ttatctgaag attaattcaa 1020
agtatttcat tattacaacg ttattataac tataataaac atatatatta atcaataaca 1080
attgtggata aggatgaagt cagttagacc aatactaatt cattttatta cattcttttt 1140
aacaagtgga aatgtctttg caggaaatgg tgatgttaat caatattcaa gtgattttgg 1200
acgagcatta aacgatctta tgatcgcttt taacgaggct aaaaaaatgt atgcaaaatt 1260
ttctgaacag atcacggaca ctatgtttca tacctacaaa aatagtattg atatactaaa 1320
agcagatgag aagaatggtg gtcataaaaa ttaccttgaa aagaaagaaa ttgagctcaa 1380
aagtaaaaact gtggaatttg acgtcatttt ttcaaacatt gatttaaata atagtacggt 1440
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aattgttgat gaaatatact ataaggctct tggtaacaatt gaaggtgaaa atgctgaaaa 1560
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tattaaacca attatgggat atttaactga gatatacaat atgcacatac caattatatac 1680
aaataaaagc gaatttaatg atatcaagaa agcatttgaa aagcacgaat tagaagctaa 1740
tgttttgata tccaagatat tagaaaaataa tcagaatttt ggcactaatt ttaatgacat 1800
tttaaatgaa gtgaatggtg caattgaaga atttaataaa actattgacg tcatgaataa 1860
caccattggg gaccttggtt ttgttattga cagcgggtatt atttcaagca taaaatcaca 1920
tatttccaca atcgccaaga tttctaaagc aataatccct ggacaaatgg cattagtttt 1980
tactgcatta atattaattc taaattaaat gaaattcaga tgtatatatt attatatagt 2040
acaaaattta cacatttatt atatacatga acgaacatct tgctcttaaa taaagaaatt 2100
gagatataaa tggaaataaa tttaaagtaac atgagaaaga tgaatataat attaaaatat 2160
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tagtatacaa tgattctaca ttataacaag cgagaataaa taattattga ttagtcataa 2280
tattatgtat atgttaagggt tgattgttat gtgttgctaa tatgttatat aattgtatac 2340
catagtgatt gatataatgt agaggataac tttggatatt atttgatgac tgataattat 2400
agtatataat tataataatg tttataaaaa tgacattaat ttgaaagttt aaattaaaaa 2460
atatgtaaaa atatgtattt aaatctgaaa tggctaataa tacgttattt tgtaattaat 2520
tattttgtat ttataataat taattatatt aatttctgaa 2560

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<210> 136

<211> 309

<212> PRT

<213> Babesia microti

<400> 136

Gln Leu Trp Ile Arg Met Lys Ser Val Arg Pro Ile Leu Ile His Phe  
5 10 15

Ile Thr Phe Phe Leu Thr Ser Gly Asn Val Phe Ala Gly Asn Gly Asp  
20 25 30

Val Asn Gln Tyr Ser Ser Asp Phe Gly Arg Ala Leu Asn Asp Leu Met

35					40					45					
Ile	Ala	Phe	Asn	Glu	Ala	Lys	Lys	Met	Tyr	Ala	Lys	Phe	Ser	Glu	Gln
50						55					60				
Ile	Thr	Asp	Thr	Met	Phe	His	Thr	Tyr	Lys	Asn	Ser	Ile	Asp	Ile	Leu
65					70					75					80
Lys	Ala	Asp	Glu	Lys	Asn	Gly	Gly	His	Lys	Asn	Tyr	Leu	Glu	Lys	Lys
				85					90					95	
Glu	Ile	Glu	Leu	Lys	Ser	Lys	Thr	Val	Glu	Phe	Asp	Val	Ile	Phe	Ser
			100					105					110		
Asn	Ile	Asp	Leu	Asn	Asn	Ser	Thr	Val	Lys	Asn	Glu	Ile	Ile	Lys	Leu
		115					120					125			
Leu	Asn	Asp	Ile	Ser	Thr	Ile	Ser	Thr	Asp	Ile	Lys	Ser	Ile	Val	Asp
		130					135					140			
Glu	Ile	Tyr	Tyr	Lys	Ala	Leu	Gly	Thr	Ile	Glu	Gly	Glu	Asn	Ala	Glu
145				150							155				160
Asn	Phe	Glu	Tyr	Glu	Ile	Lys	Lys	Lys	Lys	Ala	Glu	Leu	Leu	Arg	Asn
				165					170					175	
Leu	Leu	Asn	Asp	Asn	Ile	Lys	Pro	Ile	Met	Gly	Tyr	Leu	Thr	Glu	Ile
			180					185					190		
Tyr	Asn	Met	His	Ile	Pro	Ile	Ile	Ser	Asn	Lys	Ser	Glu	Phe	Asn	Asp
		195					200					205			
Ile	Lys	Lys	Ala	Phe	Glu	Lys	His	Glu	Leu	Glu	Ala	Asn	Val	Leu	Ile
	210					215					220				
Ser	Lys	Ile	Leu	Glu	Asn	Asn	Gln	Asn	Phe	Gly	Thr	Asn	Phe	Asn	Asp
225				230							235				240
Ile	Leu	Asn	Glu	Val	Asn	Gly	Ala	Ile	Glu	Glu	Phe	Asn	Lys	Thr	Ile
			245						250					255	
Asp	Val	Met	Asn	Asn	Thr	Ile	Gly	Asp	Leu	Gly	Ile	Val	Ile	Asp	Ser
			260					265					270		
Gly	Ile	Ile	Ser	Ser	Ile	Lys	Ser	His	Ile	Ser	Thr	Ile	Ala	Lys	Ile
		275					280					285			
Ser	Lys	Ala	Ile	Ile	Pro	Gly	Gln	Met	Ala	Leu	Val	Phe	Thr	Ala	Leu
	290					295					300				
Ile	Leu	Ile	Leu	Asn											
305															

<210> 137  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> PCR primer

<400> 137  
 gatcctctgg tggctccggt tcta 24

<210> 138  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> PCR primer

<400> 138  
 agcttagaac cggagccacc agag 24

<210> 139  
 <211> 29  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> PCR primer

<400> 139  
 attccagaac ccaatgcgga ttcagaatc 29

<210> 140  
 <211> 37  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> PCR primer

<400> 140  
 cttgaattca tagaatccca ggaaagcctt aaacatg 37

<210> 141  
 <211> 31  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> PCR primer

<400> 141  
 ccgccgtaga attctcaatt tacaataaat g 31

<210> 142  
 <211> 32  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> PCR primer

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32

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 <213> Babesia

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 tcgtatgata ctacagacaac gcaagaaata tgtgaagagt gtgaagaagg gcatgacaaa 720  
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 gggcatgaca aaatcaataa gaataaaagt ggaaatgctg gaataaaatc gtatgatact 960  
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<210> 144
<211> 677
<212> PRT
<213> Babesia
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<400> 144

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35 40 45

Val Leu Pro Glu Ser Leu Asp Glu Gly Val Pro His Gln Phe Ser Arg  
50 55 60

Leu Gly His His Ser Asp Met Ala Ser Asp Ile Asn Asp Glu Glu Pro  
65 70 75 80

Ser Phe Lys Ile Gly Glu Asn Asp Ile Ile Gln Pro Pro Trp Glu Asp  
85 90 95

Thr Ala Pro Tyr His Ser Ile Asp Asp Glu Glu Leu Asp Asn Leu Met  
100 105 110

Arg Leu Thr Ala Gln Glu Thr Ser Asp Asp His Glu Glu Gly Asn Gly  
115 120 125

Lys Leu Asn Thr Asn Lys Ser Glu Lys Thr Glu Arg Lys Ser His Asp  
130 135 140

Thr Gln Thr Pro Gln Glu Ile Tyr Glu Glu Leu Asp Asn Leu Leu Arg  
145 150 155 160

Leu Thr Ala Gln Glu Ile Tyr Glu Glu Arg Lys Glu Gly His Gly Lys  
165 170 175

Pro Asn Thr Asn Lys Ser Glu Lys Ala Glu Arg Lys Ser His Asp Thr  
180 185 190

Gln Thr Thr Gln Glu Ile Cys Glu Glu Cys Glu Glu Gly His Asp Lys  
195 200 205

Ile Asn Lys Asn Lys Ser Gly Asn Ala Gly Ile Lys Ser Tyr Asp Thr  
210 215 220

Gln Thr Thr Gln Glu Ile Cys Glu Glu Cys Glu Glu Gly His Asp Lys  
225 230 235 240

Ile Asn Lys Asn Lys Ser Gly Asn Ala Gly Ile Lys Ser Tyr Asp Thr  
245 250 255

Gln Thr Pro Gln Glu Thr Ser Asp Ala His Glu Glu Gly His Asp Lys  
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 325 330 335  
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 340 345 350  
 Gln Thr Pro Leu Lys Lys Lys Asp Phe Cys Lys Glu Gly Cys His Gly  
 355 360 365  
 Cys Asn Asn Lys Pro Glu Asp Asn Glu Arg Asp Pro Ser Ser Pro Asp  
 370 375 380  
 Asp Asp Gly Gly Cys Glu Cys Gly Met Thr Asn His Phe Val Phe Asp  
 385 390 395 400  
 Tyr Lys Thr Thr Leu Leu Leu Lys Ser Leu Lys Thr Glu Thr Ser Thr  
 405 410 415  
 His Tyr Tyr Ile Ala Met Ala Ala Ile Phe Thr Ile Ser Leu Phe Pro  
 420 425 430  
 Cys Met Phe Lys Ala Phe Leu Gly Ser Ser Gly Gly Ser Gly Ser Lys  
 435 440 445  
 Leu Thr Asp Asp Ile Lys Lys Ala Phe Asp Glu Cys Lys Ser Asn Ala  
 450 455 460  
 Ile Ile Leu Lys Lys Lys Ile Leu Asp Asn Asp Glu Asp Tyr Lys Ile  
 465 470 475 480  
 Asn Phe Arg Glu Met Val Asn Glu Val Thr Cys Ala Asn Thr Lys Phe  
 485 490 495  
 Glu Ala Leu Asn Asp Leu Ile Ile Ser Asp Cys Glu Lys Lys Gly Ile  
 500 505 510  
 Lys Ile Asn Arg Asp Val Ile Ser Ser Tyr Lys Leu Leu Leu Ser Thr  
 515 520 525  
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545 550 555 560

Gly Thr Ser Val Ser Ala Thr Ser Thr Leu Thr Gly Asn Gly Gly Thr  
565 570 575

Glu Ser Gly Gly Thr Ala Gly Thr Thr Thr Ser Ser Gly Thr Glu Ala  
580 585 590

Gly Gly Thr Ser Gly Thr Thr Thr Ser Ser Gly Ala Ala Ser Gly Lys  
595 600 605

Ala Gly Thr Gly Thr Ala Gly Thr Thr Thr Ser Ser Glu Gly Ala Gly  
610 615 620

Ser Asp Lys Ala Gly Thr Gly Thr Ser Gly Thr Thr Thr Ser Ser Gly  
625 630 635 640

Thr Gly Ala Gly Gly Ala Gly Ser Gly Gly Pro Ser Gly His Ala Ser  
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Asn Ala Lys Ile Pro Gly Ile Met Thr Leu Thr Leu Phe Ala Leu Leu  
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Thr Phe Ile Val Asn  
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<211> 26

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<220>

<223> Primer

<400> 145

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26

<210> 146

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 146

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30

<210> 147

<211> 30

<212> DNA

<213> Artificial Sequence

<220>  
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<400> 147  
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<210> 148  
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<223> Primer

<400> 157

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<210> 158

<211> 30

<212> DNA

<213> Artificial Sequence

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<223> Primer

<400> 158

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<400> 159

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39

<210> 160

<211> 36

<212> DNA

<213> Artificial Sequence

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<400> 160

ccaatagaat tcatcaacct ggggcatggg gtgtag

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<210> 161

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

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<400> 161

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<210> 162

<211> 36

<212> DNA  
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<220>  
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<400> 162  
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36

<210> 163  
<211> 1906  
<212> DNA  
<213> Babesia microti

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gccgatgcc aagtaacccc ttctaccccc aataccaatg tgaacatcaa aacaattatc 180  
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<210> 164  
<211> 711  
<212> DNA  
<213> Babesia microti

&lt;400&gt; 164

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aatgtggatt cagttgtttt tttcttgaat ccactggcca agcactgatg a 711

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&lt;210&gt; 165

&lt;211&gt; 1248

&lt;212&gt; DNA

&lt;213&gt; Babesia microti

&lt;400&gt; 165

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&lt;210&gt; 166

&lt;211&gt; 1842

&lt;212&gt; DNA

&lt;213&gt; Babesia microti

&lt;400&gt; 166

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tttatcgatg acctgaatt agtttttagat gagttatcca agcacagttt gcttataaat 240
aacgaagggtg ccaagagcat gctatcctct ctactactaa gcttccgtta tattaatcac 300
ataagaaatt tgatcaatgg tattttacct ggattgaata acccatcatc gtccattggg 360

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 aatctcatca cattcataga tgcattgatc aaggagttga acgttcatat taaacagaca 540  
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 aatgagacaa ttttctcata cctatactcc ctcatatcta taatttttcc ggaggatatt 1740  
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<210> 167

<211> 918

<212> DNA

<213> Babesia microti

<400> 167

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 ggtgcaattg aagaatttaa taaaactatt gacgtcatga ataacaccat tggggacctt 780  
 ggtattgtta ttgacagcgg tattatttca agcataaaat catatatatt cacaatcgcc 840  
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<210> 168

<211> 696

<212> DNA

<213> Babesia microti

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accgccgctc aatcaacaac agctgtctaca tcaacaacag ctgtctacatc aacaacatct 180
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ataaacgaaa taggatttgt tgatcaagtt ccagagggtc tttcttctag ttacgttttt 420
tctactgatg gaatctttac caaagttacc ccagctacag ggttttcaat tggttgtgta 480
atatttggca atcaattaat tccacagtcc atggatgtta tcactaggac cgtttcatac 540
accactaaat atcctttgat tgttgttagg attcaagata agacttcgag ttctacttca 600
accgtttact atgagcaatc tggtttataa tctagcaaat ttgttttgag ggatgaccca 660
gaatttacat cccaactaac aagtcttttc tagtga 696

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&lt;210&gt; 169

&lt;211&gt; 786

&lt;212&gt; DNA

&lt;213&gt; Babesia microti

&lt;400&gt; 169

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atgcagcatc accaccatca ccacgggttct cgtttctctg agatgggggtc aagattctct 60
gtgtctccct gggcctgggt ggaatgtccc tctgtcttc caagtcctct gttccagggtg 120
accatgtccc catcccagtc cctctgatgg tctcatgcc ctctctcag ttcttggtg 180
ctccccacc cccgccacat ccccatcaag gactgccggc tctcactg ctacccatgc 240
agggtgtctc tgcccctgcg ccccggcacc tctagtgtt ccgtcccctc ccggccccac 300
tcagcgccac cccatgtcgc agggccgcgc tccgcgccac gggacctgca gtacagcttg 360
agccgctccc ccttggcgtc gcgactgcgc tggctgcgc ctgcggactc cggcggtcgt 420
tccgacgtca cctactcgtc gctgtgcctg ctctgcggcc gcgacggtcc ggcgggcgca 480
tgccaaacct gcgggccacg cgtggccttc gtcccgcgtc aggcagggtt gcgagaacgc 540
gccgccacgc tgctgcacct gcggccgggc gcgcgctata ccgtgcgcgt ggcgcgcgtc 600
aacggtgtct caggcccagc ggccgcgcgc gaagccacct acgcgcaggt caccgtgtcc 660
accggaccgc gaggtgaggc cacgcgcccc agcggagtcc gtccccctcc ccaaccgcag 720
ttccctctat gcattccaag tcattcagga acccacgtga ctacacccca tgccccaggt 780
tgatga 786

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&lt;210&gt; 170

&lt;211&gt; 561

&lt;212&gt; DNA

&lt;213&gt; Babesia microti

&lt;400&gt; 170

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atgcagcatc accaccatca ccacgagggc tatttagatc tcgatttgaa ttccaagatt 60
ggtaacttta ttccagccat cgaactcact aacctgacca acacggtaaa atcagcgagc 120
gtccaccctc cccaactaaa agtgttggct ctgaagtgtg gcaacaagat cgttgatgtc 180
gaggagacag gcaggacatt tgttacattt gatgagaagt tgaattcaat agaaataatt 240
accttcgaaa atgatggcac tatgacatca aaattttatt ccaggggagtc cctagactca 300
acaacctaca ttggacatgc ctctacgtac acacttcccg aagtgtttac cagggtcatta 360
tgttgtaaag aggacttatg tacgcttgac attacggatc tattgttgaa agagattagt 420
gctaagaaat tggaggagtg taggaagaag aatgcatcta gtggtactcc atctggtggt 480
acaccttcta atgttccaga ggagtgtgta attagaacca acttacagat ggttatgaag 540
aagaatgctc gtgcctgata a 561

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&lt;210&gt; 171

<400> 171

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<210> 172
<211> 635
<212> PRT
<213> Babesia microti
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Met Gln His His His His His His Asp Glu Leu Asn Leu Asp Gln Ala  
5 10 15

Lys Thr Ile Ser Ser Gln Lys Ile Ala Asp Ala Thr Val Thr Pro Ser  
35 40 45

Lys Ile Leu Met Ile Ser Glu Thr Ile Ser Ser Thr Ala Leu Ala Arg  
65 70 75 80

Ile Pro Glu Arg Leu Thr Ser Ile Val Val Asp Leu Lys Ser Ala Thr  
100 105 110

Val	Pro	Gln	Glu	Val	Ala	Leu	Lys	Asn	Gly	Val	Tyr	Lys	Leu	Lys	Asp
		115					120					125			

Gln Phe Lys Leu Thr His Lys Met Ile Pro Val Phe Gly Ser Val Gln  
130 135 140

Leu Gln Ile Pro Glu Lys Ser Thr Val Val Gln Ile Ser Val Val Glu  
 145 150 155 160  
 His Glu Asn Asp Thr Lys Met Ala Ile Ile Thr Leu Asp Asp His Ser  
 165 170 175  
 Lys Leu Thr Leu Glu Arg Val Ile Leu Ser Glu Thr Pro Thr Val Val  
 180 185 190  
 Gly Leu Thr His Thr Thr Gln Asp Pro Leu Asp Val Leu Leu Ser Ile  
 195 200 205  
 Phe Val Lys Met Asp Asn Thr Thr Asp Asp Gly Val Met Glu Gly Tyr  
 210 215 220  
 Leu Asp Leu Asp Leu Asn Ser Lys Ile Gly Asn Phe Ile Ser Ala Ile  
 225 230 235 240  
 Glu Leu Thr Asp Leu Thr Asn Thr Val Lys Ser Ala Ser Val His Pro  
 245 250 255  
 Pro Gln Leu Lys Val Leu Ala Leu Lys Phe Gly Asn Lys Ile Val Asp  
 260 265 270  
 Val Glu Glu Thr Gly Arg Thr Phe Val Thr Phe Asp Glu Lys Leu Asn  
 275 280 285  
 Ser Ile Glu Ile Ile Thr Phe Glu Asn Asp Gly Thr Met Thr Ser Lys  
 290 295 300  
 Phe Tyr Ser Arg Glu Ser Leu Asp Pro Thr Thr Tyr Ile Gly His Ala  
 305 310 315 320  
 Pro Thr Asp Ile Phe Thr Ser Pro Trp Ile Thr Thr His Met His Asn  
 325 330 335  
 Lys Arg Leu Val Asp Phe Glu Val Pro Phe Glu Ala Ile Phe Asp Asp  
 340 345 350  
 Lys Leu Ile Ser Tyr Tyr Thr Gly Thr Asp Val Asn Gly Lys Asn Lys  
 355 360 365  
 Val Pro Ala Glu Leu Thr Lys Ala Ile Cys Gly Lys Glu Asp Val Cys  
 370 375 380  
 Glu Leu Asn Ile Thr Gly Leu Leu Leu Lys Asp Ile Ser Ala Lys Lys  
 385 390 395 400  
 Leu Glu Glu Cys Arg Lys Lys Asn Ala Ser Ser Gly Thr Pro Ser Gly  
 405 410 415  
 Gly Thr Pro Ser Asn Val Pro Glu Glu Cys Val Ile Lys Ser Asn Leu  
 420 425 430



Gln Thr Val Met Lys Lys Asp Val Thr Thr Thr Leu Lys Ser Asp Asp  
435 440 445

Val Ser Asn Tyr Ser Val Val Ser Ile His Phe Tyr Ile Asp Asn Val  
450 455 460

Phe Arg His Asn Thr Ala Phe Gly Arg Ile Lys Ile Gly Asn Leu Asp  
465 470 475 480

Leu Pro Ala Phe Ser Ile Gly Phe Ile His Ser Ile Phe Val Glu Arg  
485 490 495

Val Leu Met Gly Asp Lys Ser Leu Ala Ser Val Gly Ile Ile Thr Asn  
500 505 510

Tyr Gly Pro Ser Gly Asp Tyr Glu Leu Leu Arg Tyr Met Gln Val Glu  
515 520 525

Glu Gly Lys Asn Tyr Phe Lys Leu Val Gln Gly Pro Glu Ile Thr Ala  
530 535 540

Asp Tyr Ile Gly Ser Gly Leu Thr Lys His Lys Arg Leu Thr Met Asn  
545 550 555 560

Gly Ala Ser Thr Gly Ser Ile Gly Phe Glu Thr Asn Tyr Lys Glu Ser  
565 570 575

Ile Leu Phe Asn Glu Phe Met Arg Pro Thr Asn Lys Ile Val Thr Leu  
580 585 590

Phe Tyr Thr Asp Ser Glu Thr Val Asn Leu Ile Lys Leu His Ser Leu  
595 600 605

Glu Asn Val Lys His Gly Val Thr Tyr Ser Ile Tyr Gly Ala Phe Pro  
610 615 620

Ile Glu Glu Ser Ser Pro Glu Ser Ser Leu Met  
625 630 635

<210> 173

<211> 235

<212> PRT

<213> Babesia microti

<400> 173

Met Gln His His His His His His Asp Val Ile Thr Arg Thr Val Ser  
5 10 15

Tyr Thr Thr Lys Tyr Pro Leu Ile Val Val Arg Ile Gln Asp Lys Thr  
20 25 30

Ser Ser Ser Thr Ser Thr Val Tyr Tyr Glu Gln Ser Gly Leu Gln Ser  
35 40 45

Ser Lys Phe Val Leu Arg Asp Asp Pro Glu Phe Ile Ile Pro Gln Asn  
 50 55 60  
 Arg Ser Ser Thr Tyr Thr Val Asn Asp Ile Thr Tyr Lys Ser Phe Asp  
 65 70 75 80  
 Ile Ser Ser Ala Asp Asp Asn Glu Phe Leu Lys Ile Ser Leu Ser Asp  
 85 90 95  
 Gly Ser Met Leu Tyr Thr Asn Asn Pro Asp Ser Lys Ile Tyr Ile Ser  
 100 105 110  
 Glu Val Lys Val Gly Glu Ile Thr Ile Pro Ile Asn Ile Thr Ser Gln  
 115 120 125  
 Tyr Thr Leu Ile Lys Leu Ser Phe Asn Gly Glu Leu Val Glu Leu Tyr  
 130 135 140  
 Thr Thr Gly Cys Phe Gly Glu His Asn Ile Lys Lys Phe Arg Lys Val  
 145 150 155 160  
 Gly Ser Thr Tyr Asn Asp Ile Ser Asn Ala Phe Asp Ile Val Pro Trp  
 165 170 175  
 Ile Pro Ala His Phe Val Val Thr Gln Lys Val Asp Phe Ser Ile Pro  
 180 185 190  
 Phe Asp Leu Phe Glu Ser Asn Tyr His Ser Ile Leu Leu Pro Ala Gly  
 195 200 205  
 Val Asn His Ser Ile His Ile Asn Thr Glu Thr Gly Asn Val Asp Ser  
 210 215 220  
 Val Val Phe Phe Leu Asn Pro Leu Ala Lys His  
 225 230 235

&lt;210&gt; 174

&lt;211&gt; 415

&lt;212&gt; PRT

&lt;213&gt; Babesia microti

&lt;400&gt; 174

Met Gln His His His His His Val Asn Ala Leu Ile Lys Glu Leu  
 5 10 15

Asn Ala His Ile Lys Gln Arg Ala Thr Ser Thr Thr Thr Ile Ile Ile  
 20 25 30

Glu Thr Asn Ala Lys Asp Val Asp Glu Leu Val Lys Lys Phe Ala Thr  
 35 40 45

Ile Ala Ser Phe Asp Asp Lys Phe Lys Asn Val Phe Phe Asp Asn Ser

50	55	60
Val Ile Asp Glu Ile Val Lys Thr Leu Glu Lys Met Lys Val Glu Ser 65 70 75 80		
Asp Thr Val Leu Pro Ser Cys Asn Gly Ile Gln Thr Thr Glu Asn Ser 85 90 95		
Ser Thr Asp Pro Tyr Thr Val Leu Ser Lys Leu Ile Lys Lys Ile Asn 100 105 110		
Asp Ser Ile Ile Arg Pro Met Thr Ser Arg Leu Ile Asn Lys Ser Phe 115 120 125		
Pro Glu Leu Cys Lys Leu Phe Ile Lys Met Pro Asp Val Asp Ser Asn 130 135 140		
Lys Phe Met Ala Leu Asp Val Asp Ile Ser Asn Thr Leu Val Asn Arg 145 150 155 160		
Arg Val Arg Tyr Ser Asp Gly Arg Phe Thr Ile Val Ser Thr Gly Ser 165 170 175		
Asn Phe Arg Tyr Thr Leu Ala Pro Thr Ala Ala Gly His Asp Leu Ser 180 185 190		
Leu Phe Ser Gln Leu Pro Ile Ser Met Ile Thr Val Thr Ser Pro Gln 195 200 205		
Glu Gln Ala Leu Thr Ser Cys Val Ser His Gly Asn Glu Phe Ser Ile 210 215 220		
Val Ser Thr Ala Gly Lys Thr Thr Tyr Thr Thr Gln Ser Lys Leu Leu 225 230 235 240		
Ser Leu Phe Lys Leu Ser Ala Glu Thr Leu Arg Asp Phe Asn Glu Ala 245 250 255		
Arg Phe Ala Leu Gly Asn Met Thr Asp Ser Ala Asn Lys Ser Lys Ala 260 265 270		
Leu Glu Val Tyr Lys Ser Thr Leu Thr Thr Met Lys Ser Ile Ser Val 275 280 285		
Glu Leu Glu Lys Ile Phe Gly Ile Leu Lys Ser Thr Pro Asn Ile Thr 290 295 300		
Phe Glu Ser Val Val Ser Lys Tyr Lys Leu Thr Gly Val Asn Thr Val 305 310 315 320		
Asp Thr Ala Asn Ala Asp Val Ile Asn Glu Thr Met Phe Asp Asp Leu 325 330 335		
Ser Lys Ala Ile Ser Ser Tyr Leu Tyr Ser Leu Ile Ser Ile Ile Phe		

340	345	350
Pro Glu Asp Ile Lys Gly Gln Gly Thr Ser Glu Gly Gln Gln Thr Ser		
355	360	365
Gly Gly Gln Asp Thr Asn Glu Thr Ile Phe Ser Tyr Leu Tyr Ser Leu		
370	375	380
Ile Ser Ile Ile Phe Pro Glu Asp Ile Lys Gly Ala Glu Phe Asp Ile		
385	390	395
Lys Leu Ile Asp Thr Val Asp Leu Glu His His His His His His		
405	410	415

<210> 175  
 <211> 613  
 <212> PRT  
 <213> Babesia microti

<400> 175
Met Gln His His His His His His Leu Arg Val Lys Asp Ala Ser Ser
5 10 15
Thr Glu Ala Thr Ile Arg Met Phe Leu Arg Phe Asn Ala Phe Ile Lys
20 25 30
Phe Leu Asn Glu Glu Lys Ser Arg Gly Asp Lys Ser Ala Leu Asn Asp
35 40 45
Glu Gly Leu Met Arg Phe Ile Ser Met Thr Ser Gly Phe Ile Asp Asp
50 55 60
Leu Glu Leu Val Leu Asp Glu Leu Ser Lys His Ser Leu Leu Ile Asn
65 70 75 80
Asn Glu Gly Ala Lys Ser Met Leu Ser Ser Leu Ile Leu Ser Phe Arg
85 90 95
Tyr Ile Asn His Ile Arg Asn Leu Ile Asn Gly Ile Tyr Leu Gly Leu
100 105 110
Asn Asn Pro Ser Ser Ser Ile Gly Glu Thr Ala Gln Glu Thr Thr Glu
115 120 125
Pro Ser Thr Pro Thr Pro Thr Pro Ser Thr Gln Thr Ile Leu Lys Pro
130 135 140
Lys Gly Ser Glu Ile Arg Gly Tyr Ile Ile Lys Val Asp Gln Thr Ala
145 150 155 160
Asn Leu Ile Thr Phe Ile Asp Ala Leu Ile Lys Glu Leu Asn Val His
165 170 175

Ile Lys Gln Thr Thr Thr Ser Ser Val Val Gly Thr Lys Glu Thr Asn  
 180 185 190  
 Gly Thr Thr Ser Gly Ser Pro Glu Ser Asn Pro Gly Ser Thr Asp Ser  
 195 200 205  
 Gly Ser Ile Gln Ala Glu Val Ala Glu Leu Leu Lys Lys Phe Ala Thr  
 210 215 220  
 Ile Ala Ser Phe Asp Glu Lys Phe Thr Asn Leu His Ile Asn Lys Pro  
 225 230 235 240  
 Phe Ala Asp Ala Leu Ile Lys Arg Leu Asn Glu Ile Lys Ala Glu Leu  
 245 250 255  
 Ser Ser Asn Ser Gly Thr Pro Pro Lys Leu Pro Asp Ile Ser Cys Leu  
 260 265 270  
 Arg Leu Ser Glu Ile Val Gln Lys Leu Asn Arg Leu Ile Lys Phe Asn  
 275 280 285  
 Thr Ser Arg Leu Ile Asn Lys Ser Phe Pro Glu Leu Cys Lys Leu Phe  
 290 295 300  
 Ile Lys Met Pro Asp Val Asp Ser Asn Lys Phe Met Ala Leu Asp Val  
 305 310 315 320  
 Asp Ile Ser Asn Thr Leu Val Asn Arg Arg Val Arg Tyr Ser Asp Gly  
 325 330 335  
 Arg Phe Thr Ile Val Ser Thr Gly Ser Asn Phe Arg Tyr Thr Leu Ala  
 340 345 350  
 Pro Thr Ala Ala Gly His Asp Leu Ser Leu Phe Ser Gln Leu Pro Ile  
 355 360 365  
 Ser Met Ile Thr Val Thr Ser Pro Gln Glu Gln Ala Leu Thr Ser Cys  
 370 375 380  
 Val Ser His Gly Asn Glu Phe Ser Ile Val Ser Thr Ala Gly Lys Thr  
 385 390 395 400  
 Thr Tyr Thr Thr Gln Ser Lys Leu Leu Ser Leu Phe Lys Leu Ser Ala  
 405 410 415  
 Glu Thr Leu Arg Asp Phe Asn Glu Ala Arg Phe Ala Leu Gly Asn Met  
 420 425 430  
 Thr Asp Ser Ala Asn Lys Ser Lys Ala Leu Glu Val Tyr Lys Ser Thr  
 435 440 445  
 Leu Thr Thr Met Lys Ser Ile Ser Val Glu Leu Glu Lys Ile Phe Gly  
 450 455 460

Ile Leu Lys Ser Thr Pro Asn Ile Thr Phe Glu Ser Val Val Ser Lys  
465 470 475 480

Tyr Lys Leu Thr Gly Val Asn Thr Val Asp Thr Ala Asn Ala Asp Val  
485 490 495

Ile Asn Glu Thr Met Phe Asp Asp Leu Ser Lys Ala Ile Ser Ser Tyr  
500 505 510

Leu Tyr Ser Leu Ile Ser Ile Ile Phe Pro Glu Asp Ile Lys Gly Gln  
515 520 525

Gly Thr Ser Glu Gly Gln Gln Thr Ser Glu Gly Gln Gln Thr Ser Glu  
530 535 540

Gly Gln Gln Thr Ser Gly Asp Gln Asp Thr Ser Gly Gly Gln Asp Thr  
545 550 555 560

Asn Glu Thr Ile Phe Ser Tyr Leu Tyr Ser Leu Ile Ser Ile Ile Phe  
565 570 575

Pro Glu Asp Ile Lys Gly Gln Gly Thr Ser Ala Gln Leu Leu Glu Tyr  
580 585 590

Arg Thr Gln Leu Ala Ser Leu Ser Lys Ile Lys Ser Leu Arg Lys Lys  
595 600 605

Ile Lys Arg Arg Leu  
610

<210> 176

<211> 303

<212> PRT

<213> Babesia microti

<400> 176

Met Gln His His His His His His His Phe Ile Thr Phe Phe Leu Thr  
5 10 15

Ser Gly Asn Val Phe Ala Gly Asn Gly Asp Val Asn Gln Tyr Ser Ser  
20 25 30

Asp Phe Gly Arg Ala Leu Asn Asp Leu Met Ile Ala Phe Asn Glu Ala  
35 40 45

Lys Lys Met Tyr Ala Lys Phe Ser Glu Gln Ile Thr Asp Thr Met Ile  
50 55 60

His Thr Cys Lys Asn Ser Ile Asp Ile Leu Glu Ala Asp Glu Lys Asn  
65 70 75 80

Gly Gly His Lys Asn Tyr Leu Glu Lys Lys Glu Ile Glu Leu Lys Ser  
85 90 95

Lys Ile Val Glu Phe Asn Ala Ile Phe Ser Asn Ile Asp Leu Asn Asn  
 100 105 110  
 Ser Thr Val Lys Asn Glu Ile Ile Lys Leu Leu Asn Asp Ile Ser Thr  
 115 120 125  
 Ile Ser Thr Asp Ile Lys Ser Ile Val Asp Glu Ile Tyr Tyr Lys Ala  
 130 135 140  
 Leu Gly Thr Ile Glu Gly Glu Asn Ala Glu Asn Phe Glu Tyr Glu Ile  
 145 150 155 160  
 Lys Lys Lys Lys Ala Glu Leu Leu Arg Asn Leu Leu Asn Asp Asn Ile  
 165 170 175  
 Lys Pro Ile Met Gly Tyr Leu Thr Glu Ile Tyr Asn Met His Ile Pro  
 180 185 190  
 Ile Ile Ser Asn Lys Ser Glu Phe Asn Asp Ile Lys Lys Ala Phe Glu  
 195 200 205  
 Lys His Glu Leu Glu Ala Asn Val Leu Ile Ser Lys Ile Leu Glu Asn  
 210 215 220  
 Asn Gln Asn Phe Gly Thr Asn Phe Asn Asp Ile Leu Asn Glu Val Asn  
 225 230 235 240  
 Gly Ala Ile Glu Glu Phe Asn Lys Thr Ile Asp Val Met Asn Asn Thr  
 245 250 255  
 Ile Gly Asp Leu Gly Ile Val Ile Asp Ser Gly Ile Ile Ser Ser Ile  
 260 265 270  
 Lys Ser Tyr Ile Ser Thr Ile Ala Lys Ile Ser Asn Ser Ile Ile Pro  
 275 280 285  
 Gly Gln Met Ala Leu Val Phe Thr Ala Leu Ile Leu Ile Leu Asn  
 290 295 300

<210> 177

<211> 230

<212> PRT

<213> Babesia microti

<400> 177

Met Gln His His His His His His Arg Leu Thr Leu Thr Leu Ala Thr  
 5 10 15

Asn Thr Arg Gly Gly Ala Gly Thr Asp Ala Thr Ser Val Ser Ile Ala  
 20 25 30

Asn Ser Ile Pro Thr Ser Ala Ala Thr Ala Ala Gln Ser Thr Thr Ala  
 35 40 45  
 Ala Thr Ser Thr Thr Ala Ala Thr Ser Thr Thr Ser Ala Thr Ser Thr  
 50 55 60  
 Thr Ser Ala Thr Ser Thr Thr Ala Thr Thr Ser Thr Thr Thr Ala Thr  
 65 70 75 80  
 Ser Thr Thr Thr Ala Thr Ser Thr Thr Ala Thr Thr Ser Thr Thr Ala  
 85 90 95  
 Ala Thr Ser Thr Ile Ser Pro Ser Leu Glu Thr Thr Gln Asp Val Ala  
 100 105 110  
 Val Thr Asn Ile Val Asn Leu Asn Ile Asn Glu Ile Gly Phe Val Asp  
 115 120 125  
 Gln Val Pro Glu Gly Leu Ser Ser Ser Tyr Val Phe Ser Thr Asp Gly  
 130 135 140  
 Ile Phe Thr Lys Val Thr Pro Ala Thr Gly Phe Ser Ile Gly Cys Val  
 145 150 155 160  
 Ile Phe Gly Asn Gln Leu Ile Pro Gln Ser Met Asp Val Ile Thr Arg  
 165 170 175  
 Thr Val Ser Tyr Thr Thr Lys Tyr Pro Leu Ile Val Val Arg Ile Gln  
 180 185 190  
 Asp Lys Thr Ser Ser Ser Thr Ser Thr Val Tyr Tyr Glu Gln Ser Gly  
 195 200 205  
 Leu Gln Ser Ser Lys Phe Val Leu Arg Asp Asp Pro Glu Phe Thr Ser  
 210 215 220  
 Gln Leu Thr Ser Ser Phe  
 225 230

<210> 178

<211> 185

<212> PRT

<213> Babesia microti

<400> 178

Met Gln His His His His His His Glu Gly Tyr Leu Asp Leu Asp Leu  
 5 10 15

Asn Ser Lys Ile Gly Asn Phe Ile Ser Ala Ile Glu Leu Thr Asn Leu  
 20 25 30

Thr Asn Thr Val Lys Ser Ala Ser Val His Pro Pro Gln Leu Lys Val  
 35 40 45



Leu Ala Leu Lys Phe Gly Asn Lys Ile Val Asp Val Glu Glu Thr Gly  
 50 55 60  
 Arg Thr Phe Val Thr Phe Asp Glu Lys Leu Asn Ser Ile Glu Ile Ile  
 65 70 75 80  
 Thr Phe Glu Asn Asp Gly Thr Met Thr Ser Lys Phe Tyr Ser Arg Glu  
 85 90 95  
 Ser Leu Asp Ser Thr Thr Tyr Ile Gly His Ala Ser Thr Tyr Thr Leu  
 100 105 110  
 Pro Glu Val Leu Thr Arg Ser Leu Cys Gly Lys Glu Asp Leu Cys Thr  
 115 120 125  
 Leu Asp Ile Thr Asp Leu Leu Leu Lys Glu Ile Ser Ala Lys Lys Leu  
 130 135 140  
 Glu Glu Cys Arg Lys Lys Asn Ala Ser Ser Gly Thr Pro Ser Gly Gly  
 145 150 155 160  
 Thr Pro Ser Asn Val Pro Glu Glu Cys Val Ile Arg Thr Asn Leu Gln  
 165 170 175  
 Met Val Met Lys Lys Asn Ala Arg Ala  
 180 185  
 <210> 179  
 <211> 260  
 <212> PRT  
 <213> Babesia microti  
 <400> 179  
 Met Gln His His His His His His Gly Ser Arg Phe Ser Glu Met Gly  
 5 10 15  
 Ser Arg Phe Ser Val Ser Pro Trp Ala Trp Leu Glu Cys Pro Ser Cys  
 20 25 30  
 Leu Pro Ser Pro Leu Phe Gln Val Thr Met Ser Pro Ser Gln Ser Pro  
 35 40 45  
 Arg Trp Ser Ser Cys Pro Pro Leu Ser Ser Trp Leu Leu Pro His Pro  
 50 55 60  
 Arg His Ile Pro Ile Lys Asp Cys Arg Leu Ser Tyr Cys Tyr Pro Cys  
 65 70 75 80  
 Arg Val Leu Met Pro Leu Arg Pro Gly Thr Ser Ser Ala Ser Val Pro  
 85 90 95  
 Ser Arg Pro His Ser Ala Pro Pro His Val Ala Gly Pro Pro Ser Ala

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<210> 180
<211> 297
<212> PRT
<213> Babesia microti

<400> 180
Met Gln His His His His His His Glu Ala Asn Ile Arg Thr Asn Gln
          5                      10                      15

Thr Val Arg Ile Tyr Leu Ala Leu Gln Glu Ser Tyr Leu His Thr His
          20                      25                      30

Ala His Val Leu Ser Val Cys Thr Ala Thr Ser Thr Thr Ser Ala Thr
          35                      40                      45

Ser Thr Thr Ala Thr Thr Ser Thr Thr Thr Ala Thr Ser Thr Thr Thr
          50                      55                      60

Ala Thr Ser Thr Thr Ala Thr Thr Ser Thr Thr Ala Ala Thr Ser Thr
          65                      70                      75                      80

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Ile Ser Pro Ser Leu Glu Thr Thr Gln Asp Val Ala Val Thr Asn Ile  
                     85                    90                    95  
 Val Asn Leu Asn Ile Asn Glu Ile Gly Phe Val Asp Gln Val Pro Glu  
                     100                    105                    110  
 Gly Leu Ser Ser Ser Tyr Val Phe Ser Thr Asp Gly Ile Phe Thr Lys  
                     115                    120                    125  
 Val Thr Pro Ala Thr Gly Phe Ser Ile Gly Cys Val Ile Phe Gly Asn  
                     130                    135                    140  
 Gln Leu Ile Pro Gln Ser Met Asp Val Ile Thr Arg Thr Val Ser Tyr  
                     145                    150                    155                    160  
 Thr Thr Lys Tyr Pro Leu Ile Val Val Arg Ile Gln Asp Lys Thr Ser  
                     165                    170                    175  
 Ser Ser Thr Ser Thr Val Tyr Tyr Glu Gln Ser Gly Leu Gln Ser Ser  
                     180                    185                    190  
 Lys Phe Val Leu Arg Asp Asp Pro Glu Phe Ile Ile Pro Gln Asn Arg  
                     195                    200                    205  
 Ser Ser Thr Tyr Thr Val Asn Asp Ile Thr Tyr Lys Ser Phe Asp Ile  
                     210                    215                    220  
 Ser Ser Ala Asp Asp Asn Glu Phe Leu Lys Ile Ser Leu Ser Asp Gly  
                     225                    230                    235                    240  
 Ser Met Leu Tyr Thr Asn Asn Pro Asp Ser Lys Ile Tyr Ile Ser Glu  
                     245                    250                    255  
 Val Lys Val Gly Glu Ile Thr Ile Pro Ile Asn Ile Thr Ser Gln Tyr  
                     260                    265                    270  
 Thr Leu Ile Lys Leu Ser Phe Asn Gly Glu Leu Val Glu Leu Tyr Thr  
                     275                    280                    285  
 Thr Gly Cys Phe Gly Glu His Asn Ile  
                     290                    295  
 <210> 181  
 <211> 25  
 <212> PRT  
 <213> B. microti  
 <400> 181  
 Thr Gly Thr Ala Gly Thr Thr Thr Ser Ser Glu Gly Ala Gly Ser Asp  
                     5                    10                    15  
 Lys Ala Gly Thr Gly Thr Ser Gly Thr  
                     20                    25

<210> 182  
 <211> 25  
 <212> PRT  
 <213> B. microti

<400> 182  
 Glu Ala Gly Gly Thr Ser Gly Thr Thr Thr Ser Ser Gly Ala Ala Ser  
                           5                          10                          15

Gly Lys Ala Gly Thr Gly Thr Ala Gly  
                           20                          25

<210> 183  
 <211> 25  
 <212> PRT  
 <213> B. microti

<400> 183  
 Thr Gly Asn Gly Gly Thr Glu Ser Gly Gly Thr Ala Gly Thr Thr Thr  
                           5                          10                          15

Ser Ser Gly Thr Glu Ala Gly Gly Thr  
                           20                          25

<210> 184  
 <211> 25  
 <212> PRT  
 <213> B. microti

<400> 184  
 Thr Glu Ser Gly Gly Ala Gly Ser Gly Thr Gly Thr Ser Val Ser Ala  
                           5                          10                          15

Thr Ser Thr Leu Thr Gly Asn Gly Gly  
                           20                          25

<210> 185  
 <211> 25  
 <212> PRT  
 <213> B. microti

<400> 185  
 Tyr Ile Val Gly Ala Gly Val Glu Ala Val Thr Val Ser Val Ser Ala  
                           5                          10                          15

Thr Ser Asn Gly Thr Glu Ser Gly Gly  
                           20                          25

<210> 186

<211> 25  
 <212> PRT  
 <213> B. microti

<400> 186  
 Gly Ile Lys Ile Asn Arg Asp Val Ile Ser Ser Tyr Lys Leu Leu Leu  
                           5                          10                          15  
 Ser Thr Ile Thr Tyr Ile Val Gly Ala  
                           20                          25

<210> 187  
 <211> 26  
 <212> PRT  
 <213> B. microti

<400> 187  
 Thr Cys Ala Asn Thr Lys Phe Glu Ala Leu Asn Asp Leu Ile Ile Ser  
                           5                          10                          15  
 Asp Cys Glu Lys Lys Gly Ile Lys Ile Asn  
                           20                          25

<210> 188  
 <211> 25  
 <212> PRT  
 <213> B. microti

<400> 188  
 Ile Leu Asp Asn Asp Glu Asp Tyr Lys Ile Asn Phe Arg Glu Met Val  
                           5                          10                          15  
 Asn Glu Val Thr Cys Ala Asn Thr Lys  
                           20                          25

<210> 189  
 <211> 27  
 <212> PRT  
 <213> B. microti

<400> 189  
 Pro Ser Gly His Ala Ser Asn Ala Lys Ile Pro Gly Ile Met Thr Leu  
                           5                          10                          15  
 Thr Leu Phe Ala Leu Leu Thr Phe Ile Val Asn  
                           20                          25

<210> 190  
 <211> 25  
 <212> PRT

<213> B. microti

<400> 190

Gly Thr Ser Gly Thr Thr Thr Ser Ser Gly Thr Gly Ala Gly Gly Ala  
5 10 15

Gly Ser Gly Gly Pro Ser Gly His Ala  
20 25

<210> 191

<211> 25

<212> PRT

<213> B. microti

<400> 191

Asp Asp Ile Lys Lys Ala Phe Asp Glu Cys Lys Ser Asn Ala Ile Ile  
5 10 15

Leu Lys Lys Lys Ile Leu Asp Asn Asp  
20 25

<210> 192

<211> 25

<212> PRT

<213> B. microti

<400> 192

Gly Asn Ala Gly Ile Lys Ser Tyr Asp Thr Gln Thr Thr Gln Glu Ile  
5 10 15

Cys Glu Glu Cys Glu Glu Gly His Asp  
20 25

<210> 193

<211> 25

<212> PRT

<213> B. microti

<400> 193

Thr Gln Glu Ile Cys Glu Glu Cys Glu Glu Gly His Asp Lys Ile Asn  
5 10 15

Lys Asn Lys Ser Gly Asn Ala Gly Ile  
20 25

<210> 194

<211> 50

<212> PRT

<213> B. microti

&lt;400&gt; 194

Gly Lys Pro Asn Thr Asn Lys Ser Glu Lys Ala Glu Arg Lys Ser His  
                             5                            10                            15

Asp Thr Gln Thr Thr Gln Glu Ile Cys Glu Glu Gly Gly Thr Ser Gly  
                             20                            25                            30

Thr Thr Thr Ser Ser Gly Ala Ala Ser Gly Lys Ala Gly Thr Gly Thr  
                             35                            40                            45

Ala Gly  
           50

&lt;210&gt; 195

&lt;211&gt; 26

&lt;212&gt; PRT

&lt;213&gt; B. microti

&lt;400&gt; 195

Gly Lys Pro Asn Thr Asn Lys Ser Glu Lys Ala Glu Arg Lys Ser His  
                             5                            10                            15

Asp Thr Gln Thr Thr Gln Glu Ile Cys Glu  
                             20                            25

&lt;210&gt; 196

&lt;211&gt; 25

&lt;212&gt; PRT

&lt;213&gt; B. microti

&lt;400&gt; 196

Leu Asp Asn Leu Leu Arg Leu Thr Ala Gln Glu Ile Tyr Glu Glu Arg  
                             5                            10                            15

Lys Glu Gly His Gly Lys Pro Asn Thr  
                             20                            25

&lt;210&gt; 197

&lt;211&gt; 25

&lt;212&gt; PRT

&lt;213&gt; B. microti

&lt;400&gt; 197

Ser Glu Lys Thr Glu Arg Lys Ser His Asp Thr Gln Thr Pro Gln Glu  
                             5                            10                            15

Ile Tyr Glu Glu Leu Asp Asn Leu Leu  
                             20                            25

&lt;210&gt; 198

<211> 25  
 <212> PRT  
 <213> B. microti

<400> 198  
 Ile Lys Ser Tyr Asp Thr Gln Thr Pro Gln Glu Thr Ser Asp Ala His  
                   5                  10                  15  
 Glu Glu Glu His Gly Asn Leu Asn Lys  
                   20                  25

<210> 199  
 <211> 26  
 <212> PRT  
 <213> B. microti

<400> 199  
 Ile Cys Glu Glu Cys Glu Glu Gly His Asp Lys Ile Asn Lys Asn Lys  
                   5                  10                  15  
 Ser Gly Asn Ala Gly Ile Lys Ser Tyr Asp  
                   20                  25

<210> 200  
 <211> 25  
 <212> PRT  
 <213> B. microti

<400> 200  
 Thr Ala Gln Glu Thr Ser Asp Asp His Glu Glu Gly Asn Gly Lys Leu  
                   5                  10                  15  
 Asn Thr Asn Lys Ser Glu Lys Thr Glu  
                   20                  25

<210> 201  
 <211> 25  
 <212> PRT  
 <213> B. microti

<400> 201  
 Thr Asn Lys Ser Glu Lys Ala Glu Arg Lys Ser His Asp Thr Gln Thr  
                   5                  10                  15  
 Thr Gln Glu Ile Cys Glu Glu Cys Glu  
                   20                  25

<210> 202  
 <211> 25  
 <212> PRT



<213> B. microti

<400> 202

Glu Glu Gly His Asp Lys Ile Asn Lys Asn Lys Ser Gly Asn Ala Gly  
5 10 15

Ile Lys Ser Tyr Asp Thr Gln Thr Pro  
20 25

<210> 203

<211> 25

<212> PRT

<213> B. microti

<400> 203

Asp Thr Gln Thr Pro Gln Glu Thr Ser Asp Ala His Glu Glu Gly His  
5 10 15

Asp Lys Ile Asn Thr Asn Lys Ser Glu  
20 25

<210> 204

<211> 1359

<212> DNA

<213> Babesia microti

<400> 204

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aatatgaata	tgagcataca	gaattagcaa	aagagcattg	caagaaagaa	aaatgtgtaa	180
atgtggataa	cattgaggat	aataatttga	aaatatatgc	gaaacagttt	aaatctgtag	240
ttactactcc	agctgatgta	gcgggtgtgt	cagatggatt	ttttatacgt	ggccaaaatc	300
ttggtgctgt	gggcagtgtg	aatgaacaac	ctaatactgt	tggtatgagt	ttagaacaat	360
tcatcaagaa	cgagctttat	tcttttagta	atgaaattta	tcatacaata	tctagtcaaa	420
tcagtaattc	tttcttaata	atgatgtctg	atgcaattgt	taaacatgat	aactatattt	480
taaaaaaaga	aggtgaaggc	tgtgaacaaa	tctacaatta	tgaggaattt	atagaaaagt	540
tgaggggtgc	tagaagttag	gggaataata	tgtttcagga	agctctgata	aggttttagga	600
atgctagtag	tgaagaaatg	gttaatgctg	caagttatct	atccgccgcc	cttttcagat	660
ataaggaatt	tgatgatgaa	ttattcaaaa	aggccaacga	taattttgga	cgcgatgatg	720
gatatgattt	tgattatata	aatacaaaga	aagagttagt	tatacttgcc	agtgtgttgg	780
atggtttgga	tttaataatg	gaacgtttga	tcgaaaattt	cagtgatgtc	aataatacag	840
atgatattaa	gaaggcattt	gacgaatgca	aatctaattg	tattatattg	aagaaaaaga	900
tacttgacaa	tgatgaagat	tataagatta	attttaggga	aatggtgaat	gaagtaacat	960
gtgcaaacac	aaaatttgaa	gocctaaatg	atttgataat	ttccgactgt	gagaaaaaag	1020
gtattaagat	aaacagagat	gtgatattca	gctacaaatt	gcttctttcc	acaatcacct	1080
atattgttgg	agctggagtt	gaagctgtaa	ctgttagtgt	gtctgctaca	tctaattggaa	1140
ctggtggtgg	tggagctgct	agtggaaactg	gaactagtgg	aactactacg	tctagtgaag	1200
gtgctggtag	tggtaaagct	ggaactggaa	ctagtggaaac	tactacgtct	agtggaaactg	1260
gtgctggtgg	agctggtagt	ggtggacctg	gtggacatgc	ttctaattgca	aaaatttcctg	1320
gaataatgac	actaactcta	tttgcattat	taacatttta			1359

<210> 205

<211> 25  
 <212> DNA  
 <213> Babesia microti

<400> 205  
 aaatgttaat aatgcaaata gagtt 25

<210> 206  
 <211> 26  
 <212> DNA  
 <213> Babesia microti

<400> 206  
 caatgaataa tgatacaaat aatgg 26

<210> 207  
 <211> 54  
 <212> PRT  
 <213> Babesia microti

<400> 207  
 Tyr Ile Val Gly Ala Gly Val Glu Ala Val Thr Val Ser Val Ser Ala  
                     5                    10                    15  
 Thr Ser Asn Gly Thr Gly Gly Gly Gly Ala Ala Ser Gly Thr Gly Thr  
                     20                    25                    30  
 Ser Gly Thr Thr Thr Ser Ser Glu Gly Ala Gly Ser Gly Lys Ala Gly  
                     35                    40                    45  
 Thr Gly Thr Ser Gly Thr  
                     50

<210> 208  
 <211> 45  
 <212> PRT  
 <213> Babesia microti

<400> 208  
 Tyr Ile Val Gly Ala Gly Val Glu Ala Val Thr Val Ser Val Ser Ala  
                     5                    10                    15  
 Thr Ser Asn Gly Thr Glu Ser Gly Gly Ala Gly Ser Gly Thr Gly Thr  
                     20                    25                    30  
 Ser Val Ser Ala Thr Ser Thr Leu Thr Gly Asn Gly Gly  
                     35                    40                    45

<210> 209  
 <211> 452  
 <212> PRT  
 <213> Babesia microti

Lys	Tyr	Asp	Lys	Arg 5	Phe	Asn	Glu	His	Thr 10	Asp	Met	Asn	Gly	Ile 15	His
Tyr	Tyr	Tyr	Ile 20	Asp	Gly	Ser	Leu	Leu 25	Ala	Ser	Gly	Glu	Val 30	Thr	Ser
Asn	Phe	Arg 35	Tyr	Ile	Ser	Lys	Glu 40	Tyr	Glu	Tyr	Glu	His 45	Thr	Glu	Leu
Ala	Lys 50	Glu	His	Cys	Lys	Lys 55	Glu	Lys	Cys	Val	Asn 60	Val	Asp	Asn	Ile
Glu 65	Asp	Asn	Asn	Leu	Lys 70	Ile	Tyr	Ala	Lys	Gln 75	Phe	Lys	Ser	Val	Val 80
Thr	Thr	Pro	Ala	Asp 85	Val	Ala	Gly	Val	Ser 90	Asp	Gly	Phe	Phe	Ile 95	Arg
Gly	Gln	Asn	Leu 100	Gly	Ala	Val	Gly	Ser 105	Val	Asn	Glu	Gln	Pro 110	Asn	Thr
Val	Gly	Met 115	Ser	Leu	Glu	Gln	Phe 120	Ile	Lys	Asn	Glu	Leu 125	Tyr	Ser	Phe
Ser	Asn	Glu	Ile	Tyr	His	Thr 135	Ile	Ser	Ser	Gln	Ile 140	Ser	Asn	Ser	Phe
Leu 145	Ile	Met	Met	Ser	Asp 150	Ala	Ile	Val	Lys	His 155	Asp	Asn	Tyr	Ile	Leu 160
Lys	Lys	Glu	Gly	Glu 165	Gly	Cys	Glu	Gln	Ile 170	Tyr	Asn	Tyr	Glu	Glu 175	Phe
Ile	Glu	Lys	Leu 180	Arg	Gly	Ala	Arg	Ser 185	Glu	Gly	Asn	Asn	Met 190	Phe	Gln
Glu	Ala	Leu 195	Ile	Arg	Phe	Arg	Asn 200	Ala	Ser	Ser	Glu	Glu 205	Met	Val	Asn
Ala	Ala 210	Ser	Tyr	Leu	Ser	Ala 215	Ala	Leu	Phe	Arg	Tyr 220	Lys	Glu	Phe	Asp
Asp 225	Glu	Leu	Phe	Lys	Lys 230	Ala	Asn	Asp	Asn	Phe 235	Gly	Arg	Asp	Asp	Gly 240
Tyr	Asp	Phe	Asp	Tyr 245	Ile	Asn	Thr	Lys	Lys 250	Glu	Leu	Val	Ile	Leu 255	Ala
Ser	Val	Leu 260	Asp	Gly	Leu	Asp	Leu 265	Ile	Met	Glu	Arg	Leu 270	Ile	Glu	Asn
Phe	Ser	Asp	Val	Asn	Asn	Thr	Asp	Asp	Ile	Lys	Lys	Ala	Phe	Asp	Glu

275		280		285
Cys Lys Ser Asn Ala Ile Ile Leu Lys Lys Lys Ile Leu Asp Asn Asp				
290		295		300
Glu Asp Tyr Lys Ile Asn Phe Arg Glu Met Val Asn Glu Val Thr Cys				
305		310		315
Ala Asn Thr Lys Phe Glu Ala Leu Asn Asp Leu Ile Ile Ser Asp Cys				
	325		330	335
Glu Lys Lys Gly Ile Lys Ile Asn Arg Asp Val Ile Ser Ser Tyr Lys				
	340		345	350
Leu Leu Leu Ser Thr Ile Thr Tyr Ile Val Gly Ala Gly Val Glu Ala				
	355		360	365
Val Thr Val Ser Val Ser Ala Thr Ser Asn Gly Thr Gly Gly Gly Gly				
	370		375	380
Ala Ala Ser Gly Thr Gly Thr Ser Gly Thr Thr Thr Ser Ser Glu Gly				
	385		390	395
Ala Gly Ser Gly Lys Ala Gly Thr Gly Thr Ser Gly Thr Thr Thr Ser				
	405		410	415
Ser Gly Thr Gly Ala Gly Gly Ala Gly Ser Gly Gly Pro Ser Gly His				
	420		425	430
Ala Ser Asn Ala Lys Ile Pro Gly Ile Met Thr Leu Thr Leu Phe Ala				
	435		440	445
Leu Leu Thr Phe				
	450			

&lt;210&gt; 210

&lt;211&gt; 2079

&lt;212&gt; DNA

&lt;213&gt; Babesia microti

&lt;400&gt; 210

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aatccaacat ctgacctagt tagtatatat aggttaatat cacattatag attatctttg 60
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taccggtgat tctgaggacc tactttaaag agaataatta acatatctac cagaatcagt 180
tccaatttat gtattttaaa gctaatactact actcgaaaac tacggtgaaa atggaaaaaac 240
aagtggaagc tgtatgtcgt ggaaagtcac tacattttat gtgggcaaat ttaataattc 300
taaatactat gtttttgatg ttaaaaagcg aaaaacacac tttaatgcac attttaacat 360
catctgtata atatatatat cagcgttgaa atcatatggc aaaggtaata aagcgttaca 420
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attatgctag taatttgtga ttaataatgg caatatattat atacaaatat tcgagcgttc 540
tattatatgc atgcacataa ttaatcacia actctcatat catggggcgg tttcgcccat 600
cataaacatt actgtagtag ctctggtaga ttagcatggt gaatctctcg atacctgggc 660
tactgttgct ttccgcatat tccttaaatt ctgcaagtgc gggggatgta tatgagatat 720

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cttctggtaa tccacccgac atagagccaa catctacttc tctagaaaca aatgtagtta 780
ccaactatat tccagaaccc aatgcggatt cagaatctgt acatgttgaa atccaggaac 840
atgataacat caatccacaa gacgcttgcg atagtgaagc gctcgaacaa atggattctg 900
ataccagggt gttgcccgaag agtttgatg aggggggtacc acaccaattc tctagattag 960
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tgttaaagag cctcaagact gaaacatcca ctcatatta cattgccatg gctgcaattt 2040
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<210> 211

<211> 481

<212> PRT

<213> Babesia microti

<400> 211

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Met Val Asn Leu Ser Ile Pro Gly Leu Leu Leu Leu Ser Ala Tyr Ser
          5                      10                      15

```

```

Leu Asn Ser Ala Ser Ala Gly Asp Val Tyr Glu Ile Ser Ser Gly Asn
          20                      25                      30

```

```

Pro Pro Asp Ile Glu Pro Thr Ser Thr Ser Leu Glu Thr Asn Val Val
          35                      40                      45

```

```

Thr Asn Tyr Ile Pro Glu Pro Asn Ala Asp Ser Glu Ser Val His Val
          50                      55                      60

```

```

Glu Ile Gln Glu His Asp Asn Ile Asn Pro Gln Asp Ala Cys Asp Ser
          65                      70                      75                      80

```

```

Glu Pro Leu Glu Gln Met Asp Ser Asp Thr Arg Val Leu Pro Glu Ser
          85                      90                      95

```

```

Leu Asp Glu Gly Val Pro His Gln Phe Ser Arg Leu Gly His His Ser
          100                     105                     110

```

```

Asp Met Ala Ser Asp Ile Asn Asp Glu Glu Pro Ser Phe Lys Ile Gly
          115                     120                     125

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Glu Asn Asp Ile Ile Gln Pro Pro Trp Glu Asp Thr Ala Pro Tyr His  
 130 135 140  
 Ser Ile Asp Asp Glu Glu Leu Asp Asn Leu Met Arg Leu Thr Ala Gln  
 145 150 155 160  
 Glu Thr Ser Asp Asp His Glu Glu Gly Asn Gly Lys Leu Asn Thr Asn  
 165 170 175  
 Lys Ser Glu Lys Thr Glu Arg Lys Ser His Asp Thr Gln Thr Pro Gln  
 180 185 190  
 Glu Ile Tyr Glu Glu Leu Asp Asn Leu Leu Arg Leu Thr Ala Gln Glu  
 195 200 205  
 Ile Tyr Glu Glu Arg Lys Glu Gly His Gly Lys Pro Asn Thr Asn Lys  
 210 215 220  
 Ser Glu Lys Ala Glu Arg Lys Ser His Asp Thr Gln Thr Thr Gln Glu  
 225 230 235 240  
 Ile Cys Glu Glu Cys Glu Glu Gly His Asp Lys Ile Asn Lys Asn Lys  
 245 250 255  
 Ser Gly Asn Ala Gly Ile Lys Ser Tyr Asp Thr Gln Thr Thr Gln Glu  
 260 265 270  
 Ile Cys Glu Glu Cys Glu Glu Gly His Asp Lys Ile Asn Lys Asn Lys  
 275 280 285  
 Ser Gly Asn Ala Gly Ile Lys Ser Tyr Asp Thr Gln Thr Pro Gln Glu  
 290 295 300  
 Thr Ser Asp Ala His Glu Glu Gly His Asp Lys Ile Asn Thr Asn Lys  
 305 310 315 320  
 Ser Glu Lys Ala Glu Arg Lys Ser His Asp Thr Gln Thr Thr Gln Glu  
 325 330 335  
 Ile Cys Glu Glu Cys Glu Glu Gly His Asp Lys Ile Asn Lys Asn Lys  
 340 345 350  
 Ser Gly Asn Ala Gly Ile Lys Ser Tyr Asp Thr Gln Thr Pro Gln Glu  
 355 360 365  
 Thr Ser Asp Ala His Glu Glu Glu His Gly Asn Leu Asn Lys Asn Lys  
 370 375 380  
 Ser Gly Lys Ala Gly Ile Lys Ser His Asn Thr Gln Thr Pro Leu Lys  
 385 390 395 400  
 Lys Lys Asp Phe Cys Lys Glu Gly Cys His Gly Cys Asn Asn Lys Pro  
 405 410 415

Glu Asp Asn Glu Arg Asp Pro Ser Ser Pro Asp Asp Asp Gly Gly Cys  
 420 425 430

Glu Cys Gly Met Thr Asn His Phe Val Phe Asp Tyr Lys Thr Thr Leu  
 435 440 445

Leu Leu Lys Ser Leu Lys Thr Glu Thr Ser Thr His Tyr Tyr Ile Ala  
 450 455 460

Met Ala Ala Ile Phe Thr Ile Ser Leu Phe Pro Cys Met Phe Lys Ala  
 465 470 475 480

Phe

<210> 212

<211> 20

<212> PRT

<213> Babesia microti

<400> 212

Asn Ser Ala Ser Ala Gly Asp Val Tyr Glu Ile Ser Ser Gly Asn Pro  
 5 10 15

Pro Asp Ile Glu  
 20

<210> 213

<211> 20

<212> PRT

<213> Babesia microti

<400> 213

Pro Pro Asp Ile Glu Pro Thr Ser Thr Ser Leu Glu Thr Asn Val Val  
 5 10 15

Thr Asn Tyr Ile  
 20

<210> 214

<211> 20

<212> PRT

<213> Babesia microti

<400> 214

Val Thr Asn Tyr Ile Pro Glu Pro Asn Ala Asp Ser Glu Ser Val His  
 5 10 15

Val Glu Ile Gln  
 20

<210> 215  
 <211> 20  
 <212> PRT  
 <213> Babesia microti

<400> 215  
 His Val Glu Ile Gln Glu His Asp Asn Ile Asn Pro Gln Asp Ala Cys  
                   5                  10                  15

Asp Ser Glu Pro  
                   20

<210> 216  
 <211> 21  
 <212> PRT  
 <213> Babesia microti

<400> 216  
 Ala Cys Asp Ser Glu Pro Leu Glu Gln Met Asp Ser Asp Thr Arg Val  
                   5                  10                  15

Leu Pro Glu Ser Leu  
                   20

<210> 217  
 <211> 20  
 <212> PRT  
 <213> Babesia microti

<400> 217  
 Leu Pro Glu Ser Leu Asp Glu Gly Val Pro His Gln Phe Ser Arg Leu  
                   5                  10                  15

Gly His His Ser  
                   20

<210> 218  
 <211> 20  
 <212> PRT  
 <213> Babesia microti

<400> 218  
 Leu Gly His His Ser Asp Met Ala Ser Asp Ile Asn Asp Glu Glu Pro  
                   5                  10                  15

Ser Phe Lys Ile  
                   20

<210> 219



<211> 20  
 <212> PRT  
 <213> Babesia microti

<400> 219  
 Pro Ser Phe Lys Ile Gly Glu Asn Asp Ile Ile Gln Pro Pro Trp Glu  
                   5                  10                  15

Asp Thr Ala Pro  
                   20

<210> 220  
 <211> 20  
 <212> PRT  
 <213> Babesia microti

<400> 220  
 Glu Asp Thr Ala Pro Tyr His Ser Ile Asp Asp Glu Glu Leu Asp Asn  
                   5                  10                  15

Leu Met Arg Leu  
                   20

<210> 221  
 <211> 20  
 <212> PRT  
 <213> Babesia microti

<400> 221  
 His Ser Ile Asp Asp Glu Glu Leu Asp Asn Leu Met Arg Leu Thr Ala  
                   5                  10                  15

Gln Glu Thr Ser  
                   20

<210> 222  
 <211> 20  
 <212> PRT  
 <213> Babesia microti

<400> 222  
 Thr Thr Leu Leu Leu Lys Ser Leu Lys Thr Glu Thr Ser Thr His Tyr  
                   5                  10                  15

Tyr Ile Ala Met  
                   20

<210> 223  
 <211> 21  
 <212> PRT

<213> Babesia microti

<400> 223

Glu Cys Gly Met Thr Asn His Phe Val Phe Asp Tyr Lys Thr Thr Leu  
5 10 15

Leu Leu Lys Ser Leu  
20

<210> 224

<211> 20

<212> PRT

<213> Babesia microti

<400> 224

Asp Asn Glu Arg Asp Pro Ser Ser Pro Asp Asp Asp Gly Gly Cys Glu  
5 10 15

Cys Gly Met Thr  
20

[illegible]